

2016

2016-2017 Southern Illinois University Bulletin Carbondale Campus (Graduate Catalog)

Southern Illinois University Carbondale

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This Catalog

Volume 57, June 2016

This catalog supersedes Volume 56, of the *Southern Illinois University Carbondale Bulletin*.
Graduate School Phone: 618-536-7791;
Web: <http://gradschool.siu.edu/>

This publication provides information about Southern Illinois University Carbondale. Primary attention is given to its academic programs, rules and regulations, and procedures. Students will be subject to the published requirements in effect when they are admitted to the Graduate School. Students beginning graduate work during the period of time from the start of summer session 2013 through spring semester 2014 are subject to the academic requirements of the Graduate School as specified in this publication. These requirements may be superseded by future publications of the Graduate Catalog. If the requirements are subsequently changed, students may elect either to meet the requirements in force in their particular degree programs immediately prior to the change, or to meet the new requirements. If they elect the former option they shall be guaranteed a minimum period of time from the date that the program requirements were changed within which minimum period they will be permitted to complete the old degree requirements.

This minimum period shall be determined by the department or other degree-program unit, subject to the following two constraints. First, the minimum period prescribed by the department may not exceed the standard Graduate School limitation that credit applied toward fulfillment of requirements for the master's degree must have been earned within a six-year period preceding the completion of the degree, and that doctoral students must complete degree requirements within five years after admission to candidacy. Second, the minimum period shall encompass no less than two years for master's degree students and three years for doctoral students, with the exception that students in the last stage of their degree work when requirements change (a master's student who has completed all requirements except the thesis or research report and the final examination or a doctoral student who has been admitted to Ph.D. candidacy) shall not be subject to the new requirements but may complete their degrees within the standard Graduate School limitations stated above. Students who elect to follow old requirements, but do not complete their work within the minimum period prescribed by the department, shall, unless they were in the last stage of their degree work when requirements changed, be subject to requirements in force at the time they complete their degrees, and shall be subject to the standard Graduate School limitations described above. The University reserves the right to change information contained herein on matters other than curricular requirements without notice when circumstances warrant such action.

Affirmative Action Policy

It is the policy of Southern Illinois University Carbondale to provide equal employment and educational opportunities for all qualified persons without regard to race, color, religion, sex, na-

tional origin, age, disability, status as a protected veteran, sexual orientation, or marital status. The University is committed to the principles of equal employment opportunity and affirmative action and will continue to conduct all personnel actions in accordance with the letter and spirit of applicable state and federal statutes and regulations, including Executive Order 11246 as amended. Personnel actions include, but are not limited to, recruitment, hiring, position assignments, compensation, training, promotion, tenure considerations and award, retention, lay-off, termination, and benefits.

The University recognizes that the barriers of race, color, religion, sex, national origin, age, disability, status as a protected veteran, sexual orientation, or marital status of some individuals have resulted in their denial of full participation in all societal functions and is, therefore, committed to taking affirmative steps aimed at overcoming such historical patterns of discrimination in our society. The University's affirmative action program identifies special actions intended to bring such groups into full participation in all aspects of university life. Through its affirmative action program, Southern Illinois University Carbondale is committed to: (a) increased numbers of minorities, females, individuals with disabilities, and veterans in all aspects of employment with special procedures applicable to those positions determined to be under utilized for minorities, females, individuals with disabilities, and protected veterans; (b) cultural and educational diversity in the curriculum and environment of the university; (c) removal of barriers to; and (d) support of the principles of equal opportunity and affirmative action in an effort to redress the consequences of past societal discrimination and to maintain a positive non-discriminatory educational environment.

The responsibility for coordinating and monitoring compliance with the university's equal employment opportunity/affirmative action policies is assigned to the University Affirmative Action Officer. Implementing and assuring compliance with these policies is the responsibility of the Associate Chancellor for Institutional Diversity and each vice chancellor. In addition, each dean, director, or other staff member involved in the recruitment and hiring process must ensure compliance with the spirit as well as letter of the policies and procedures. Many involved in the staff selection process assume that others are responsible for the success of the affirmative action program. It is a basic assumption of Affirmative Action Office that all administrative levels and especially deans, directors, chairs, faculty and all hiring administrators are responsible for fostering and enhancing institutional diversity. The initiating hiring officer has the primary responsibility for maintaining the integrity of these affirmative action policies and procedures and is ultimately accountable for attaining diversity within his or her staff.

The University's ADA, §504, Title IX and Sexual Harassment coordinator is Linda McCabe Smith, Associate Chancellor for Institutional Diversity, 110 Anthony Hall, Mail Code 4341, Southern Illinois University, 1265 Lincoln Drive, Carbondale, IL 62901. Phone (618) 453-1186.

The University

Southern Illinois University

Southern Illinois University has entered its second hundred years of teaching, research, and service. At the outset of the 1970's, Southern Illinois University became a single state system with two universities: Southern Illinois University Carbondale and Southern Illinois University Edwardsville. Southern Illinois University Carbondale also has a medical school campus at Springfield.

Southern Illinois University Carbondale (SIU) first operated as a two-year normal school but in 1904 became a four-year, degree-granting institution. In 1943 SIU was transformed from a teacher-training institution into a university, thus giving official recognition to the area's demand for diversified training and service. Graduate work was instituted in 1943, with the first doctoral degrees granted in 1959. There has been diversification and expansion of graduate programs across the University through the Colleges of Agricultural Sciences, Applied Sciences and Arts, Business, Education and Human Services, Engineering, Graduate School, School of Law, Liberal Arts, Mass Communication and Media Arts, Science, and the School of Medicine. Combined, these colleges presently offer over 90 graduate degree programs.

In keeping with the state's master plan, and with a commitment to enhance its Carnegie Doctoral/Research-Extensive University status, the University's objective is to provide a comprehensive educational program meeting as many individual student needs as possible. While providing excellent instruction in a broad range of traditional programs, it also helps individual students design special programs when their interests are directed toward more individualized curricula. The University comprises a faculty and the facilities to offer general and professional training ranging from two-year associate degrees to doctoral programs, as well as certificate and non-degree programs meeting the needs of persons not interested in degree education.

Enrollment

In fall semester 2015, of a total enrollment of 17,292, SIU had 3,568 registered graduate and 647 registered professional students.

Location

Carbondale is approximately 100 miles southeast of St. Louis, Missouri. Immediately south of Carbondale begins some of the most rugged and picturesque terrain in Illinois. Sixty miles to the south is the historic confluence of the Ohio and Mississippi rivers, the two forming the border of the southern tip of Little Egypt, the fourteen southernmost counties in Illinois. Within

ten miles of the campus are located two state parks and four recreational lakes and much of the area is a part of the 263,000 acre Shawnee National Forest.

Campus

The Carbondale campus, comprising more than 3,290 acres, has developed a 981 acre portion with woods and a lake as a site for its academic buildings and residence halls. The buildings are located in wooded tracts along two circular shaped campus drives, named for Lincoln and Douglas.

The Graduate School

The primary concerns of the Graduate School are graduate instruction and research. The Graduate School therefore plays an essential role in development of instructional and research programs, in acquisition of funds, and in procurement of facilities necessary to encourage and support research by members of its scholarly community. Through faculty, staff, and students the Graduate School makes its contribution to the public welfare of the region, state, nation, and international community.

The Graduate School offers master's degrees in over sixty programs and the doctoral degree in over thirty programs. Graduate students pursue advanced study and research under the leadership of a graduate faculty of over 900 members. In addition, the Schools of Law and Medicine provide graduate students with additional opportunities in instruction and research. The Graduate School administers programs in the Colleges of Agricultural Sciences, Applied Sciences and Arts, Business, Education and Human Services, Engineering, Graduate School, School of Law, Liberal Arts, Mass Communication and Media Arts, Science, and the School of Medicine.

Within these colleges and schools are departments whose distinguished faculty offer inspired teaching, conduct innovative research, and facilitate student services from admission to placement. The University has an excellent library and has a very good computing facility. For further information, see Academic Resources elsewhere in this chapter. In addition to the excellent research conducted in the colleges and schools, SIU operates a number of research and service centers, most of which have been established with the aid of outside funding. These centers also are described under Academic Resources.

Board of Trustees and Officers of Administration

Board of Trustees of Southern Illinois University

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 Lyle White, Interim, College of Education and Human Services, Wham Education Building
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 Cynthia L. Fountaine, School of Law, Lesar Law Building
 Meera Komarraju, College of Liberal Arts, Faner Hall
 Vacant, Library Affairs, Morris Library
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 J. Kevin Dorsey, School of Medicine, Wheeler Hall
 Laurie A. Achenbach, College of Science, Neckers Building

Graduate School Administration

Yueh-Ting Lee, *Dean*, Graduate School
 Ratna Sinha, *Assistant Dean*, Graduate School

Approved 2016 - 2017 University Calendar

All breaks officially begin at 10:00 o'clock the night before, and end at 7:30 the morning after, the respective beginning and ending dates listed unless otherwise noted.

Summer Session 2016

Eight-Week Session Begins	Monday, June 13
Deadline to Apply for Graduation	Friday, June 24
Deadline to Drop an 8-Week Class and Receive a Refund	Sunday, June 26
Deadline to Turn in Research Papers, Theses, Dissertations	Friday, July 8
Independence Day Holiday	Monday, July 4
Deadline to Drop an 8-Week Class	Monday, July 17
Final Examinations	Thursday/Friday, August 4-5

Fall Semester 2016

Semester Classes Begin	Monday, August 22
Deadline to Drop a Class and Receive a Refund	Sunday, September 4
Labor Day Holiday	Monday, September 5
Deadline to Apply for Graduation	Friday, September 9
Fall Break	Noon Saturday–Tuesday October 8-11
Deadline to Drop a Class	Sunday, October 30
Deadline to Turn in Research Papers, Theses, Dissertations	Thursday, November 10
Thanksgiving Vacation	Wednesday–Sunday, November 23-27
Final Examinations	Monday–Friday, December 12-16
Commencement	Saturday, December 17

Spring Semester 2017

Martin Luther King, Jr.'s Birthday Holiday	Monday, January 16
Semester Classes Begin	Tuesday, January 17
Deadline to Drop a Class and Receive a Refund	Sunday, January 29
Deadline to Apply for Graduation	Friday, February 10
Spring Vacation	Noon Saturday–Sunday, March 11–19
Deadline to Drop a Class	Sunday, April 2
Deadline to Turn in Research Papers, Theses, Dissertations	Friday, April 14
Final Examinations	Monday–Friday, May 8-12
Commencement	Saturday, May 13

Excused Absences for Religious Holidays. Students absent from classes because of required observances of major religious holidays will be excused. It is the student's responsibility to notify in advance the instructor of each class that will be missed. Students must also take the responsibility for making up work missed.

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1/ The Graduate School



Graduate Degrees Offered

The Graduate School offers the Master's, Master of Fine Arts, and Doctor of Philosophy degrees.

In several of the programs listed below, one or more concentrations are available.

Master's Degrees

Master's degrees are available in the approved programs listed below:

ABBREVIATIONS

Master of Accountancy, M.Acc.	
Master of Architecture M.ARCH.	
Master of Arts, M.A.	
Master of Arts in Teaching, M.A.T.	
Master of Business Administration, M.B.A.	
Master of Engineering, M.E.	
Master of Fine Arts, M.F.A.	
Master of Music, M.M.	
Master of Public Administration, M.P.A.	
Master of Public Health, M.P.H.	
Master of Science, M.S.	
Master of Science in Education, M.S.Ed.	
Master of Science in Physician Assistant, M.S.P.A.	
Master of Social Work, M.S.W.	
Professional Science Masters, P.S.M.	
Accountancy.....	M.Acc.
Advanced Energy and Fuels Management	P.S.M.
Agribusiness Economics	M.S.
Animal Science	M.S.
Anthropology	M.A.
Applied Linguistics	M.A.
Applied Physics	M.S.
Architecture	M.ARCH.
Art History and Visual Culture	M.A.
Behavior Analysis and Therapy	M.S.
Biological Sciences	M.S.
Biomedical Engineering	M.S., M.E.
Business Administration	M.B.A.
Chemistry	M.S.
Civil and Environmental Engineering	M.S., M.E.
Communication Disorders and Sciences	M.S.
Communication Studies	M.A.
Community Health Education.....	M.P.H.
Computer Science	M.S.
Counselor Education	M.S.Ed.
Criminology and Criminal Justice	M.A.
Curriculum and Instruction	M.S. Ed
Curriculum and Instruction Secondary Education ..	M.A.T.
Economics	M.A., M.S.
Educational Administration	M.S.Ed.
Electrical and Computer Engineering.....	M.S.
English	M.A.
Fire Service and Homeland Security Management	M.S.
Food and Nutrition.....	M.S.
Forestry	M.S.
Geography and Environmental Resources	M.S.
Geology	M.A., M.S.
Higher Education	M.S.Ed.

History	M.A.
Kinesiology	M.S.Ed.
Foreign Languages International Studies	M.A.
Manufacturing Systems	M.S.
Mathematics	M.A., M.S.
Mathematics and Science Education.....	M.S.
Mechanical Engineering and Energy Processes	M.S.
Media Theory and Research.....	M.A.
Medical Dosimetry	M.S.
Mining Engineering	M.S.
Molecular Biology, Microbiology and Biochemistry	M.S.
Molecular, Cellular, and Systemic Physiology	M.S.
Music	M.M.
Pharmacology and Neuroscience	M.S.
Philosophy	M.A.
Physician Assistant.....	M.S.P.A.
Physics	M.S.
Plant Biology	M.S.
Plant Soil and Agricultural Systems	M.S.
Political Science	M.A.
Professional Media & Media Management.....	M.S.
Psychology	M.A., M.S.
Public Administration	M.P.A.
Quality Engineering Management	M.S.
Radiological Sciences	M.S.
Recreation	M.S.Ed.
Rehabilitation Administration and Services	M.S.
Rehabilitation Counseling	M.S.
Social Work	M.S.W.
Sociology	M.A.
Special Education	M.S.Ed.
Teaching English to Speakers of Other Languages	M.A.
Workforce Education and Development	M.S.Ed.
Zoology	M.S.

Note: See Mass Communication and Media Arts for Cinema and Photography, Interactive Multimedia Journalism, and Telecommunications.

See Kinesiology for Physical Education.

See Molecular, Cellular, and Systemic Physiology for Physiology

Master of Fine Arts Degree

Master of Fine Arts (M.F.A.) degree programs are available in the fields below:

- Art and Design
- Creative Writing
- Mass Communication and Media Arts
- Theater

Doctoral Degrees

Doctor of Philosophy (Ph.D.) degree programs are available in the fields listed below along with the approved concentrations:

- Agricultural Sciences
- Anthropology
- Applied Physics
- Business Administration
- Chemistry
- Communication Studies

Computer Science
Criminology and Criminal Justice
Economics
Education
 Counselor Education
 Curriculum and Instruction
 Educational Administration
 Health Education
 Quantitative Methods
 Special Education
 Workforce Education and Development
Electrical and Computer Engineering
Engineering Science
English
Environmental Resources and Policy
 Climatology
 Earth and Environmental Processes
 Ecology
 Energy and Mineral Resources
 Environmental Policy and Administration
 Forestry, Agricultural, and Rural Land Resources
 Geographic Information Systems, Remote Sensing
 and Environmental Modeling
 Water Resources
Geosciences
 Biogeochemistry
 Earth Surface Processes
 Energy and Mineral Resources
 Geophysics
 Tectonics and Paleobiology
Historical Studies
Mass Communication and Media Arts
Mathematics
Molecular Biology, Microbiology, and Biochemistry
Molecular, Cellular, and Systemic Physiology
Pharmacology and Neuroscience
Philosophy
Plant Biology
Political Science
Psychology
 Applied Psychology
 Brain and Cognitive Sciences
 Clinical Psychology
 Counseling Psychology
Rehabilitation
Sociology
Zoology

Note: See Environmental Resources and Policy for Geography
and Geology.
See Mass Communication and Media Arts for Journalism.
See Molecular, Cellular, and Systemic Physiology for Physiology

Certificate Programs

The purpose of a graduate certificate is to enhance marketability of students, confirm special skills or knowledge acquired by students, and provide educational opportunities and continuing education to otherwise unserved segments of the community through short term graduate programs. The certificate program is designed to provide a certification of specialization to individuals who already possess a bachelor's degree. While a certificate does not lead to a degree, one-half of the certificate hours, up to a maximum of 15 hours, can be counted toward a graduate degree program. All students must be admitted to the Graduate School and make formal application to the particular certificate program.

Certificate programs have been approved for the following:

Certificate in Substance Use Disorders and Behavioral Addictions

The Post-Baccalaureate Certificate in Substance Use Disorders and Behavioral Addictions, housed in the Rehabilitation Counseling and Administration Program in the Rehabilitation Institute, is open to graduate students interested in developing proficiency in specialized counseling skills for work in treatment and other settings as a substance use disorders and behavioral addictions counselor. Students must complete 15 credits of required coursework in addition to an academic discipline-based 500 hour internship (8 credits). Didactic courses include REHB 461, 471, 558, 566, and one approved elective.

For more information contact:

Dr. Jane Nichols, Ph.D., NCC, LCPC, CRC
Rehabilitation Counseling and Administration Program
Southern Illinois University
Rehn Hall - Mail Code 4609, 1025 Lincoln Dr.
Carbondale, IL 62901
Telephone: 618-453-8291
Email: jlnichols@siu.edu

Certificate in Anatomy

The purpose of the anatomy certificate is to allow graduate students to become proficient in anatomy teaching. This will allow them to compete more effectively for jobs in this field. Students are eligible for the anatomy certificate if they are in an existing anatomically-based master's or Ph.D. program (e.g. Physiology, Anthropology, or Zoology). Additional prerequisites (e.g., embryology, basic vertebrate anatomy) are preferred. Students lacking such prerequisites will be encouraged to obtain them prior to admission into the anatomy certificate program. The Graduate Program Committee of the Department of Physiology will review all applications. In addition to graduate coursework in anatomy, students in the anatomy certificate program will obtain experience teaching gross anatomy to undergraduates and medical students. A minimum of 17-18 graduate credit hours are required for fulfillment of the certificate requirements. They are: Advanced Human Anatomy, (PHSL 401A, B, 10 hours), Histology, (ZOOL 409, 4 hours) and either Neuroanatomy, (PHSL 573, 3 hours) or Comparative Vertebrate Anatomy, (ZOOL 418, 4 hours). Where appropriate, these courses may also count for credit toward the master's or Ph.D. degree. The Graduate Program Committee in the Department and the student's advisory committee will make recommenda-

tions for other coursework and oversee the student's progress. Students supported by assistantships will have the same teaching obligations as all other departmentally supported students. Students will be required to teach at least two semesters of gross anatomy assisting Physiology and Anatomy Department faculty in the Medical School.

For more information, contact:

Director of Graduate Studies
Department of Physiology, School of Medicine
Southern Illinois University
Carbondale, IL 62901-6512
Telephone: 618-453-1544
Email: physiology@siu.edu
Website: physiology.siu.edu

Certificate in Art History

The Graduate Certificate in Art History will enable students to develop a broad knowledge of the history of art, become familiar with the discipline's methodology, and acquire skills necessary for teaching art history. It is open to students who have completed a bachelor's degree. The student must be currently enrolled in a graduate degree program at SIUC or an individual holding a bachelor's degree and admitted to the Graduate School (non-declared). Students enrolled in the MFA program offered through the School of Art and Design may enroll concurrently in the certificate program and apply part of their MFA art history coursework towards both degrees. The program requires students to complete 21 credit hours of graduate level art history coursework, including a teaching practicum, and to pass a comprehensive qualifying exam designed to assess general knowledge of art history.

For more information, contact:

Stacey Sloboda, Coordinator, Graduate Certificate
in Art History
School of Art and Design
Southern Illinois University
Mail Code 4301
Carbondale, IL 62901
Telephone: 618-453-4987
E-Mail: sloboda@siu.edu

Certificate in Civil Society, Communication, and Media Practices

The Certificate in Civil Society, Communication, and Media Practices offers students a critical, historical, and theoretical understanding of the significance of communication and media within the broader context of contemporary practices engaged in organizing public and social change. Students will learn to analyze these media practices in their various forms and contexts, from the local to the global, and the complex relationships they navigate with political and social movements, governments, and more mainstream forms, such as entertainment. Our curriculum emphasizes theory and practice and introduces students to a variety of media practices, including research methodologies based in the media arts. The certificate prepares graduates for leading, evaluating, and collaborating in communication efforts aimed at social change. Graduate students will have a broad understanding of the civic potential of media and be prepared to communicate with, promote, and participate in grassroots communities in the age of social media.

For more information, contact:

MCMA Graduate Studies Administrative Aide
College of Mass Communication and Media Arts
Southern Illinois University
Mail Code 6606
Carbondale, IL 62901
Telephone: 618-453-3785
E-Mail: mcmagrad@siu.edu

Certificate in Earth Science

The Certificate in Earth Science with an optional concentration in Geospatial Analysis or Environmental Geology is open to post baccalaureate students with degrees in earth science, geology, or related fields. It is intended to expand the knowledge, skills, and specialized training in geological topics. The coursework will include eighteen (18) graduate credit hours in Geology. While there are no specific courses required, the courses taken will be determined by the student and the departmental Coordinating Committee.

For more information, contact:

James Conder, Graduate Program Coordinator
Department of Geology
Southern Illinois University
Mail Code 4324
Carbondale, IL 62901
Telephone: 618-453-7352 or 453-3351
E-mail: conder@geo.siu.edu or geology@geo.siu.edu

Certificate in Gerontology

The Graduate Certificate in Gerontology is open to post-bachelor level students who are interested in the area of gerontology. It is designed to provide knowledge, skills, and specialized training in programs and services for older persons. The certificate includes core courses on aging in the following areas: social work, rehabilitation, health, exercise and education. Courses within the certification program will include, but not be limited to: policy and program issues, psychosocial issues and health and fitness issues. The coursework also includes a practicum in an agency suitable to the individual's interest OR research project. Students must complete 18 semester hours of study including a minimum of three hours of practicum/research, to earn the certificate.

For more information contact:

Dr. Jonathan C. Baker, Coordinator,
Certificate in Gerontology
College of Education and Human Services
Southern Illinois University
Mail Code 4310
Carbondale, IL 62901
Telephone: 618-453-8270
E-mail: jonathan.c.baker@siu.edu

Certificate in GIS

The Graduate GIS Certificate enables students to focus on advanced geospatial techniques and analytical skills. This certificate meets the needs of the expanding job opportunities for Masters' and Ph.D. students. This certificate ensures that the students understand advanced mapping technologies; know how to combine individual models and functions in ArcGIS to carry out a complicated spatial analysis task; master advanced

digital image processing and analysis technologies; and obtain competence in designing, developing, and managing spatial databases. Further, they will demonstrate an understanding of GIS's relationships with remote sensing, global positioning system, (GPS), mathematics, statistics, and other sciences and obtain capacity in integrating multi-disciplinary methods for problem-solving. Finally, they will be competent in planning, developing, and implementing a complex GIS project. Students must be admitted to an SIU graduate program or the SIU non-declared graduate program and maintain a 3.0 GPA in the certification courses. The program requires students to complete 18 credit hours of graduate level coursework from the following: GEOG 502(3) – Geographic Information Systems; GEOG 504(3) – Spatial Analysis; GEOG 506(3) – Intro to Remote Sensing; GEOG 508(3) – Advanced Remote Sensing; GEOG 520(3) – Advanced GIS Studies; GEOG 528(3) – GIS Portfolio/GIS Capstone Project.

For more information contact:

Dr. Guangxing Wang, Coordinator, :
Graduate Certificate in GIS
Department of Geography and Environmental Resources
Southern Illinois University
Mail Code 4514
Carbondale, IL 62901
Telephone: 618-453-6017
E-mail: gxwang@siu.edu or geog@siu.edu

Certificate in Histotechnology

Histotechnology is a structural science that incorporates elements from anatomy, physiology, immunology and chemistry. Histology is the science dealing with the structure, function and chemical composition of cells of normal and abnormal tissue. The histotechnologist prepares tissue specimens for microscopic examination. Histologic techniques utilize the chemical properties of both tissues and dyes to impart color to particular tissue elements to aid identification and disease diagnosis. Histology is an applied laboratory science, whose practitioners are in great demand in the current job market. A certificate in Histotechnology provides intense training in histotechnology through a combination of lectures, hands-on laboratory experience and clinical internships. Some of the certification requirements can be completed with proper selection of courses as University Core Curriculum substitutes and by using elective courses to fulfill certification requirements. Students are encouraged to discuss their interests with a departmental representative to obtain additional information.

This program admits a limited number of students based on specific selection criteria. Applicants must submit additional application materials to be approved for entry into the Histology certificate program. Students will be evaluated on the number of hours of college credit, and college grade point average as calculated by SIU. Students begin the professional sequence each fall only. The certificate program requires the successful completion of internships. In accordance with Federal and State guidelines, the internship sites may require proof of the following: vaccination for measles, mumps, rubella, tetanus, TB, and Hepatitis B; current CPR card; and proof of completion of HIPPA and blood-borne pathogens training. Affiliation sites may also require students to undergo a criminal background

check and drug screening.

For more information contact:

Dr. Richard Clough, Chair
Department of Anatomy, School of Medicine
Southern Illinois University
Mail Code 4729
Carbondale, IL 62901
Telephone: 618-453-1578
Email: rclough@siumed.edu

Certificate in Magnetic Resonance Imaging

The Post Baccalaureate Certificate in Magnetic Resonance Imaging (MRI) is housed in the Radiologic Sciences Program within the School of Allied Health. This certificate will allow MRI technologists to obtain didactic and clinical experiences in advanced areas of MRI. The program requires 18 credit hours of coursework. This includes at least one 3 credit hour didactic course selected from RAD 444, 454, and 464. Elective courses include RAD 474, 484, and 494. Students enrolled in the certificate in MRI Program will be able to develop a course of study which is tailored to meet their specific needs.

For more information contact:

Dr. Michael L. Grey, Ph.D., RT(R)(MR)(CT)
Associate Professor
Radiologic Sciences
School of Allied health
College of Applied Sciences and Arts
Southern Illinois University
Carbondale, IL 62901-6615
Telephone: 618-453-7203
E-mail: mgrey@siu.edu

Certificate in Sustainability

The Graduate Certificate in Sustainability enables students to expand their knowledge and understanding of the long-term sustainable use of the earth's resources, including water, land use and food systems, climate change, urban sustainability, and "green" energy. This certificate meets the needs of the expanding job opportunities in environmental sustainability. Students must be admitted to an SIU graduate program or the SIU non-declared graduate program and must maintain a 3.0 GPA in the certification courses. The program requires students to complete 18 credit hours of graduate level coursework, as follows: GEOG 524(3) – Sustainable Development and a total of 15 or more credit hours from the following: GEOG 521(3) – Urban Sustainability; GEOG 522(3) – Environmental and Energy Economics; GEOG 526(3) – US Environmental Policy; GEOG 529(3) – Geography of Local and Organic Food; GEOG 531(3) – Climatology; GEOG 536(3) – Natural Hazards; GEOG 539(3) – Global Climate Change; GEOG 554(3) – Conservation and Environmental Movements.

For more information contact:

Dr. Leslie Duram, Coordinator,
Graduate Certificate in Sustainability
Department of Geography and Environmental Resources
Mail Code 4514

Southern Illinois University

Carbondale, IL 62901

Telephone: 618-536-3375

E-mail: geog@siu.edu

Certificate in Women, Gender and Sexuality Studies

The purpose of the graduate certificate in Women, Gender and Sexuality Studies is to meet the demand for formal recognition of graduate level credentials in WGSS, and to enhance and broaden the perspectives of graduate students from various related fields. The program requires 18 hours of coursework. Nine hours must be at the 500-level, which includes WGSS 590. Nine hours must be taken outside the student's major discipline. The student must be currently enrolled in a graduate degree program at SIU or an individual holding a bachelor's degree and admitted to the Graduate School (non-declared).

For more information, contact:

Dr. Barbara Bickel, Director
Women, Gender and Sexuality Studies
Southern Illinois University
Mail Code 6518
Carbondale, IL 62901
Telephone: 618-453-5141
Email: wgss@siu.edu

Student Responsibility

Students are responsible for knowing degree requirements and enrolling in courses that will enable them to complete their degree programs. It is also their responsibility to know the University regulations for the standard of work required to continue in the Graduate School. For information, consult both the general and specific degree requirements enclosed in this publication. Additional details about requirements and procedures are available from your graduate adviser or the Graduate School.

Human Subjects

Before the start of any research involving human subjects, the research project must be reviewed and approved by the SIU Human Subjects Committee (an Institutional Review Board). If your master's or doctoral project will involve human subjects (including, but not limited to, administering questionnaires, conducting interviews, or accessing confidential databases), you must submit an application to the committee prior to the start of the research. Call 618-453-4533 for information and application materials or visit their website at www.ospa.siu.edu/compliance/human-subjects/index.html. When you submit your master's thesis/research paper or doctoral dissertation to the Graduate School, you must include Form A indicating that your project has been reviewed and approved by the committee. The committee cannot retroactively approve research that has already begun or been completed. If this form is not included, your master's research paper/thesis or doctoral dissertation cannot be accepted by the Graduate School.

Animal Care

The SIU Institutional Animal Care and Use Committee (IACUC) was formed to establish and enforce ethical, humane guidelines for the use of live animals in research at the University. The committee reviews all protocols involving the use of vertebrate animals for training, research, and testing to assure compliance with humane standards and federal regulations. Researchers with projects involving animals must submit a completed *Animal Use* Protocol form for the committee's review. Graduate students may not be listed as the principal investigator on an IACUC protocol. Approval of the protocol is required before the animals can be used for training, research, or testing purposes. The Laboratory Animal Program is accredited by the Association for Assessment and Accreditation of Laboratory Animal Care International. For more information, contact the Institutional Animal Care and Use Committee at 618-453-4533 or the Laboratory Animal Program at 618-536-2346 or visit the website at www.iacuc.siu.edu.

Other Research Compliances - Other compliances that are applicable to research include:

- Hazardous Materials and research utilizing Controlled Substances
- Recombinant DNA, Dual Use Research of Concern, and Select Agents
- Radiological Safety
- Stem Cell Research
- Responsible Conduct of Research

Students should discuss these compliances with their advisor. Additional information is available at ospa.siu.edu/compliance/index.html. Contact the Center for Environmental Health and Safety at 618-453-7180 or the Office of Sponsored Projects Administration at 618-453-4540

Student Rights and Responsibilities

The Office of Student Rights and Responsibilities (SRR) serves as a resource for the University community in understanding and applying the Student Conduct Code. The office strives to enhance a sense of community, accountability and responsibility. This is accomplished through educational outreach, one-on-one interactions with students and the enforcement of educationally based sanctions to address violations of the Student Conduct Code and other university policies. SRR works to balance the individual needs of each student with the needs of the academic community to find positive outcomes for all involved parties. If you have questions about the Student Conduct Code, your rights as a student, or if you believe a student has violated the Student Conduct Code or another policy, please call our office at 618-536-2338 or visit us online at <http://srr.siu.edu>. **All students are responsible for knowing and following the Student Conduct Code which is available on the SRR website.**

Degree Requirements

The following section describes Graduate School regulations unique to the master's and the doctoral degrees. For Graduate School procedures and regulations applicable to all graduate students, regardless of degree program, the student should consult the section titled "General Regulations and Procedures". For information about specific degree programs, the student should consult the departmental degree program description.

MASTER'S DEGREE PROGRAM

Requirements and admission policies for applicants to a master's degree program are elaborated on in the following paragraphs.

Admission

In order to be admitted to a degree program, an applicant must meet Graduate School admission requirements and be approved by the department or degree program concerned.

The Graduate School requires an applicant hold a bachelor's degree from an accredited institution or have completed all undergraduate degree requirements prior to the beginning of the classes for the term for which admission is sought. The applicant must have earned a grade point average (GPA) of 2.70 or better ($A = 4.00$) on approximately the last 60 semester hours of undergraduate coursework. Applicants to master's degree level study may be considered for admission with a transcript missing the last semester of bachelor's work.

An applicant who is a U.S. citizen or permanent resident and whose GPA is below 2.70 may be admitted as a nondeclared student and may later apply to a degree program when 12 or more graduate semester hours of graded graduate work at SIU have been completed. A minimum GPA of 3.00 is required in courses for which grades of *A*, *B*, *C*, *D*, *F* have been assigned. Please note that some U.S. citizens and permanent residents may be required to meet the Graduate School's English language requirement.

Any applicant who has completed 12 or more semester hours of graded graduate work at an accredited U.S. educational institution, and who has a GPA of 3.00 or better on all graduate work, may be exempted from the 2.7 undergraduate grade point average requirement.

Any student with fewer than 12 hours of graduate work may be admitted to the Graduate School on the basis of undergraduate GPA only.

General Requirements

Graduate credit earned in graduate courses for which the student has received grades of *A*, *B*, *C*, or *S*, and only such credit, is acceptable for master's degree programs. At least 21 semester hours of graduate credit with grades of *A*, *B*, or *C* must be earned in courses graded *A* through *F*. An overall grade point average of at least 3.00 in all graduate work is required before the degree can be awarded.

All graduate applications are required to have a decision made by the 10th day of the semester for which was applied. If a decision is not made by the 10th day of the semester for which was applied, applications will be withdrawn.

The Graduate School requires a minimum of 30 semester hours of acceptable graduate credit for the master's degree.

Since certain degree programs require more than 30 hours, the student should consult the description of the appropriate program for specific requirements. No more than half of the credit applied toward fulfillment of the master's degree requirements may be earned at other universities and transferred to SIU.

At least nine hours of coursework must be earned in courses taught on the Carbondale campus or in an approved residency center and at least nine hours of credit must be earned after admission to the degree program.

In addition, a minimum of fifteen hours in courses numbered 500 or above must be earned at SIU.

Students are not allowed admission into and cannot take courses in two different academic levels at the same time, unless admitted into an approved concurrent degree program.

Candidates for a master's degree are required to pass a comprehensive examination covering all of their graduate work, including the thesis. This examination may be written or oral, or both, as determined by the student's advisory committee.

Time Limits

A student has six calendar years to complete the degree. This time is calculated from initial enrollment to completion of all degree requirements including any document that must be approved by the Graduate School. This time limit includes courses taken either at SIU or elsewhere. All students must remain registered until completion of their degrees. See section "Continuing Enrollment Requirement".

Thesis

Each candidate for a master's degree shall write a thesis except where a graduate program has been approved to provide some other arrangement, such as a research paper. The thesis shall be supervised by a committee of at least three members of the graduate faculty and may be counted for not more than six nor less than three semester hours of credit. Only members of the committee may vote or make recommendations concerning acceptance of the thesis and final examination. A student will be recommended for the degree only if the members of the committee, with at most one exception not to include the committee chair, judge both the thesis and the performance at the final oral examination to be satisfactory. In cases where a committee of more than three has been approved, the requirement of not more than one negative vote will still apply.

All students admitted in a graduate program must continuously enroll except for summer. The enrollment can be in classes or in Continuing Enrollment 601.

An electronic pdf version of the approved thesis must be presented to the Graduate School by the stated deadline date. There is a library fee of \$25.00. If copyright is desired, an additional fee of \$55.00 will be required.

For non-thesis programs, a research paper should show evidence of the student's knowledge of research techniques and should be based on a special project or specific courses as may be recommended by the advisory committee. An electronic copy of the research paper must be filed in the Graduate School by submission at Open SIU by the stated deadline date. Departments with a non-paper option for a Master's degree, will have other requirements.

Double Major for a Master's Degree

A student may earn a double major for a master's degree if such a program of graduate study is commensurate with the student's vocational and professional goals.

A student interested in pursuing a double major for a master's degree must submit to the graduate dean the program of study endorsed by the chairman of both of the cooperating units. The forms for submitting a double major program of study are available in the Graduate School Admissions Office, 1263 Lincoln Drive room 310 or online at http://gradschool.siu.edu/_common/documents/DoubleMajor.pdf.

Requirements:

1. The student must have been admitted to one master's degree program.
2. Each unit in which the student wishes to earn a major must have an approved master's degree program.
3. The chair of each unit must endorse the proposed program.
4. The proposed program must specify the title of the degree which is to be awarded.
5. The proposed program must be approved by the graduate dean.
6. At least 18 semester hours must be earned for each major, and one-half of the required coursework for each major must be in courses numbered 500 or above.
7. The minimum number of hours required for the double major must total 60 percent of the sum of the total required for the two majors individually.
8. The thesis may be counted for not more than a combined total of 6 nor less than 3 semester hours of credit.

Second Master's Degree

A student may earn a second master's degree if the second degree is offered by an academic unit different from that of the first master's degree. None of the hours used towards any previous degree will be allowed to count as a part of the total number of hours toward a second master's, and all regulations shall apply to the second master's degree exactly as they would if this were a first master's degree.

Concurrent Master's Degrees Program

A concurrent master's degrees program permits students to be enrolled at the same time in two academic departments which have an approved concurrent degrees arrangement with each other, and earn two master's degrees.

Academic departments, upon approval of the Graduate Council, may establish a concurrent degrees program. Concurrent master's degrees programs will only be approved if they can be shown to enhance graduate students' educational experiences and professional opportunities. Furthermore, concurrent degrees programs must meet the following requirements:

1. Students must obtain admission to both academic departments, and must be formally admitted to the concurrent degrees program prior to completion of the master's degree requirements for either of the participating academic departments;

2. Students are required to complete all core requirements of each master's program;
3. Students are required to earn no less than 80 percent of the total number of semester hours required in the master's degree programs of each of the participating academic units. A total of nine hours may be shared.

Concurrent Master's Degrees Programs

- Agribusiness Economics and Business Administration (MS / MBA)
- Mass Communication and Media Arts and Business Administration (MA / MBA)

Concurrent Master's and Law Degrees Programs

- Accountancy and Law (JD / M.Acc.)
- Business Administration and Law (JD / MBA)
- Educational Administration and Law (JD / MEd)
- Electrical & Computer Engineering and Law (JD / MS)
- Public Administration and Law (JD / MPA)
- Social Work and Law (JD / MSW)

Concurrent Master's and Medical Degree Program

- Master's of Public Health and Medical Degree (MPH/MD)

Summary of Master's Degree Requirements

- At least 30 hours of graduate credit, or the minimum number of hours required by the specific degree program.
- Grade point average of at least 3.00.
- At least 15 hours in courses numbered 500 or above, which must be completed at SIU.
- At least 9 hours after admission to the degree program.
- At least 9 hours taught on the Carbondale campus or in an approved residency center.
- At least 21 hours of graduate coursework graded A, B, or C.
- At least one-half of the required number of hours earned at SIU.
- Courses to be applied to the degree taken within six years of conferring the degree.
- Transfer credit taken at another institution or as a nondeclared student approved by the dean of the Graduate School.
- Electronic submission of an approved thesis (pdf version) or an approved research paper (pdf version) (not applicable for M.B.A., M.Acc., or M.S.W. programs, and non-paper options).
- Comprehensive or oral examination.
- Submission of departmental clearance form.
- Register for 601 Continuing Enrollment, as required.

DOCTORAL DEGREE PROGRAM

Admission

Admission to a doctoral program in the Graduate School normally requires a master's degree or its equivalent, a grade point average in graduate work of at least 3.00, and acceptance by the academic unit offering the doctoral program. Faculty of a degree program-unit may add its own grade point average requirements (above the Graduate School minima) for admission

to that particular program. Applicants to doctoral level study may be considered for admission with a transcript missing the last semester of master's work. Current SIU Master's students must be cleared for graduation before matriculation into a Doctoral Program will be allowed.

Direct Entry into a Doctoral Program

Direct entry is possible into previously approved doctoral programs upon recommendation of the department and acceptance by the Graduate School. Applicants with exceptional research potential or outstanding academic preparation may have the option to enter a doctoral program after completion of a bachelor's degree only. No previous course work at the graduate level is allowed. Students admitted via direct entry will not receive a Master's degree. The program must be approved for direct entry and the student must have at least a 3.00 GPA on approximately the last two years of undergraduate course work.

Accelerated Entry into a Doctoral Program – for SIU Graduate Students

Students currently enrolled in a master's program at SIU may be considered for Accelerated Entry into previously approved doctoral programs, upon the recommendation of the department and acceptance by the Graduate School. At least one semester of course work must have been completed in a master's program at SIU, and a minimum grade point average of at least 3.00 must have been earned in all graduate course work (this includes graduate course work completed at other institutions). Once approved for accelerated entry, students will not receive a Master's degree. Course work completed in a masters degree program cannot be counted toward residency requirements for a doctoral program. All requests for accelerated entry must be processed by the Graduate School by the 10th day of the semester for which the student wishes to be accelerated.

Accelerated Entry into a Doctoral Program – for Non-SIU Graduate Students

Students enrolled in a master's program at a U.S. educational institution other than SIU may also be considered for Accelerated Entry into previously approved doctoral programs, upon the recommendation of the department and acceptance by the Graduate School. At least one semester of course work must have been completed in a master's program at another institution, and a minimum grade point average of at least 3.00 must have been earned in all graduate course work. Once approved for accelerated entry, students will not receive a Master's degree.

All requests for accelerated entry must be processed by the Graduate School by the 10th day of the semester for which the student wishes to be accelerated.

SIU Departments with Graduate School Approved Direct Entry and Accelerated Entry

DEPARTMENT	DIRECT ENTRY	ACCELERATED ENTRY
Anthropology	Yes	Yes
Applied Physics	Yes	Yes
Business Administration	Yes	Yes
Chemistry	Yes	Yes
Computer Science	Yes	Yes

Economics	No	Yes
Educational Administration & Higher Education	Yes	Yes
Electrical & Computer Engineering	Yes	Yes
Engineering Science	No	Yes
English	No	Yes
History	Yes	Yes
Mass Communication & Media Arts	No	Yes
Mechanical Engineering & Energy Processes	No	Yes
Molecular Biology, Microbiology, and Biochemistry	Yes	Yes
Molecular, Cellular and Systemic Physiology	Yes	Yes
Pharmacology & Neuroscience	Yes	Yes
Philosophy	Yes	Yes
Plant Biology	Yes	Yes
Political Science	Yes	Yes
Psychology	No	Yes
Rehabilitation	Yes	Yes
Sociology	No	Yes
Speech Communication	Yes	No
Zoology	Yes	Yes

General Requirements

The doctoral degree is awarded for high accomplishment in a particular discipline or a recognized interdisciplinary area, as measured by the student's ability to pass the preliminary examination for admission to candidacy, meet the research tool requirement of the program, perform a piece of original research, present the results in proper form in a dissertation, and defend the dissertation before a faculty committee. Except for the hours required to meet residency and required 24 hours of dissertation, there is no Graduate School requirement that a certain number of semester hours be taken for the doctorate although some degree programs do require a certain number of semester hours. Graduate work completed at another institution may be eligible for transfer to the student's doctoral program, subject to Graduate School regulations regarding transfer of credit and acceptance by the student's major department. Transfer credit cannot be applied toward residency.

No doctoral level residence-credit program may be established off campus, although coursework involved in a doctoral program may be taken at an off-campus residence center provided that the full, normal requirement of residence on campus at SIU is met under the usual Graduate School standards for doctoral programs. However, established cooperative programs with SIU Carbondale and SIU Edwardsville permits students to be enrolled in courses and earn credits either at SIU Carbondale or SIU Edwardsville.

Preliminary Examination

The student will generally prepare for this examination through independent study and coursework, as advised by the faculty of the doctoral program. The examination is given to determine the breadth and depth of the student's knowledge within the discipline. The particular form and content of the examination are determined by the faculty of each of the doctoral programs. The student will be permitted to take the preliminary examination at the discretion of the department, after having completed

two years of full-time study or its equivalent beyond the baccalaureate.

Research Tool Requirement

The doctorate at SIU is a research-oriented degree. The research tool requirement is intended to be an integral part of the student's program. Since research materials, problems, and techniques vary from discipline to discipline, the details of the research tool requirement are determined by the faculty of each of the doctoral programs.

Residency

The residency requirement for the doctorate must be fulfilled after admission to the doctoral program and before formal admission to doctoral candidacy. The residency requirement is satisfied by completion of 24 semester hours of graduate credit on campus as a doctoral student within a period not to exceed four calendar years. No more than six hours of deferred dissertation credit may be applied toward fulfillment of the 24 semester hours residency requirement. No doctoral student should be permitted to sign up for more than six hours of dissertation until candidacy has been achieved. Any dissertation hours registered for above the six permitted prior to candidacy will not be counted toward completion of the doctoral degree. Credit earned in concentrated courses or workshops may apply toward fulfillment of the residency requirements if the student is concurrently registered for a course spanning the full term. No more than six semester hours of short course or workshop credit may be applied to the 24 semester hours residency requirement.

Admission to Candidacy

Admission to candidacy is granted by the dean of the Graduate School upon recommendation of the faculty responsible for the student's program, after the student has fulfilled the residency requirement for the doctoral degree, passed the preliminary examination, and met the research tool requirement of the program. The doctoral degree may not be conferred less than six months after admission to candidacy, except upon approval of the dean of the Graduate School. The candidate must fulfill all requirements for the degree within a five-year period after admission to candidacy. If completion of requirements is delayed beyond five years, a student may be required to take another preliminary examination and be admitted to candidacy a second time. All candidates must remain registered until completion of their degree. See section "Continuing Enrollment Requirement".

Dissertation

After being admitted to candidacy, the student must complete a dissertation showing that the student is capable of independent research or other creative effort. A successful dissertation usually represents the most extensive and intensive scholarly work the student has performed to date. Completing the dissertation will lead the student up to the cutting edge of research (however defined by the discipline) conducted at that time in his or her field of research. A dissertation must address a significant question and demonstrate that its author can interpret findings and formulate conclusions that are the result of independent thinking and sustained evaluation of source materials. These findings must be expressed in clear and grammatical language

that is well organized into cogent and coherent argument. A dissertation that contains the student's published or in-press manuscripts, or excerpts from these manuscripts, shall, in the preface, describe these materials and their contribution to the dissertation. In the case of multi-authored manuscripts, the student's contribution to each such manuscript must be clearly delineated in the preface and attested in a separate statement by the chair of the dissertation committee addressed to the Graduate School. The dissertation shall be supervised by a faculty committee which has been approved by the dean of the Graduate School. This committee shall consist of five or more graduate faculty members, at least one of whom shall be from a graduate program outside the student's academic unit. The student's academic unit shall be understood to mean the department (or equivalent units) and any member outside the department is eligible to serve as the outside member providing that the department and the graduate dean agree.

While working on the dissertation, the student must register for the course numbered 600. The student is to devote at least one academic year of full-time work to complete the dissertation and will register for 24 semester hours of dissertation credit, for example, 12 hours for each of two terms.

Students who have registered for 24 semester hours of dissertation credit and have not completed the doctoral dissertation are subject to the continuing enrollment requirement described in the section titled "General Regulations and Procedures".

Publication of the doctoral dissertation to insure its availability to the scholarly community is considered an integral part of the process of doctoral education. Students must submit their dissertations electronically (pdf) to ProQuest for publishing. An abstract of the dissertation will be published in Dissertation Abstracts International.

The student must submit electronically a pdf. version of the dissertation acceptable to the Graduate School, along with an abstract. There is a library fee of \$25.00 for binding. If copyright is desired, an additional fee of \$55.00 will be required. The Survey Form of Earned Doctorates is completed and submitted to the Graduate School.

The abstract will be published in the current Dissertation Abstracts International and the dissertation will be cited in American Doctoral Dissertations and Comprehensive Dissertation Index. A copy of the dissertation will be placed in the Library of Congress archives. This service assures the student that the dissertation will be available to other researchers at no further personal expense to the student.

If the student elects to use the copyright service, copyright will be obtained in the student's name. Publication rights, other than for reproduction in microform or from microform, are the student's to assign to any publisher at any time. In addition, arrangements can sometimes be made for University Microfilms to publish a small edition of the dissertation.

Final Examination/Oral Defense

There will be a final oral examination administered by the student's doctoral dissertation committee. The examination will cover the subject of the dissertation and other matters related to the discipline. Any member of the graduate faculty may attend the final oral examination and may participate in questioning and discussion, subject to reasonable limitations im-

posed by the chairperson of the committee, but only members of the committee may vote or make recommendations concerning acceptance of the dissertation and final examination. A student will be recommended for the degree only if the members of the committee, with at most one exception, judge both the dissertation and the performance at the final oral examination to be satisfactory. In cases where a committee of more than five members has been approved, the requirement of not more than one negative vote will still apply.

Interdisciplinary Doctor of Philosophy Programs

These guidelines provide for interdisciplinary doctoral programs for a limited number of students whose educational requirements can be met by existing resources, but not exclusively by any one of the University's constituent units. Interdisciplinary doctoral programs will be instituted in response to the particular academic interest of individual students, not as programs of a permanent nature. The procedures and criteria given below govern the authorization and control of interdisciplinary doctoral programs.

1. After admission to an established doctoral program at SIU and upon the recommendation of the chairperson or adviser of that program, a student may apply for an interdisciplinary doctoral program to the dean of the Graduate School.
2. The dean of the Graduate School will apply the following criteria in deciding whether a program committee should be established to consider the proposed interdisciplinary doctoral program.
 - a. The requisite staff must be available.
 - b. The library holdings must be adequate without unreasonable additions.
 - c. The program must lie within the recognized disciplines or fields of study, at least one of which offers the doctoral program.
3. If the dean of the Graduate School is satisfied that the proposed program satisfies these criteria, the dean shall form a special program committee of five members, at least three of whom shall be from units offering the doctorate.
4. If the committee approves the proposed program, a plan of study shall be developed that includes the following elements:
 - a. Fields or areas of study
 - b. Required courses
 - c. Languages or other research tool requirements
 - d. Dissertation subject
 - e. Preliminary examination
5. The program as approved by the committee and accepted for principal sponsorship by a unit with an approved doctoral program shall be submitted to the dean of the Graduate School. Upon final approval the student's program shall have the same binding effect upon the Graduate School as programs printed in the graduate catalog. The degree earned shall carry the title of the doctoral unit that has assumed principal sponsorship. The commencement program shall give specific indication that the degree is interdisciplinary and include a listing of those

units that are substantively involved in addition to the principal sponsoring unit, as determined by the graduate dean.

6. When the committee has certified all the required performances, including the results of examinations, the committee shall be dissolved.

Concurrent Doctoral and Law Degrees Programs Political Science and Law (JD / Ph.D.)

Cooperative Doctoral Degree Programs between SIU Carbondale and SIU Edwardsville

A cooperative doctoral program between SIU Carbondale and SIU Edwardsville permits classified graduate students to be enrolled in certain designated courses at either SIU Carbondale or SIU Edwardsville and earn credit in partial fulfillment of the doctoral degree requirements at SIU Carbondale. The following SIU Carbondale doctoral programs have approved cooperative agreements with SIU Edwardsville:

Educational Administration Ph.D.
Engineering Science Ph.D.
Historical Studies Ph.D.

Summary of Doctoral Degree Requirements

- Achievement of a grade point average of at least 3.00.
- Completion of any specific courses required by the doctoral program.
- Fulfillment of the residency requirement.
- Completion of the research tool required by the doctoral program.
- Passing of the preliminary examination.
- Admission to candidacy.
- Completion of an approved dissertation with 24 hours of dissertation credit.
- Oral defense of dissertation.
- Electronic submission of dissertation (pdf version) to the Graduate School.
- Completion of Survey of Earned Doctorate.
- Degree conferred not less than six months nor more than five years after admission to candidacy.
- Submission of departmental clearance form.
- Register for 601 Continuing Enrollment, as required.

General Regulations and Procedures

This section includes Graduate School procedures and regulations applicable to all graduate students regardless of degree classification. Requirements unique to the master's and doctoral degrees are stated in the section titled Degree Requirements. For information about specific degree programs the student should consult the appropriate degree program description. Requirements unique to the non-degree classifications are stated in the section in this chapter titled "Nondeclared Students—Non-Degree".

APPLICATION FOR GRADUATE STUDY

Information regarding graduate degree programs offered at SIU can be found on the Graduate School home page at <http://gradschool.siu.edu/>. Under the Admissions section, see the link "Academic Degree Programs"; there is basic information relating to each program – areas of interest, graduate tests required, terms for which that program admits students, application deadlines, and departmental contact information.

Applying to a Degree Program

The online application for admission to Graduate School can be found on the Graduate School home page at <http://gradschool.siu.edu/>; see "Apply Now". This application is required for admission to all programs, and allows the student to upload most of their application materials and to submit them electronically. Check your own department's home page for a list of required materials.

Some items, such as official transcripts, portfolios and official test scores, may need to be mailed directly to the department. See the Degree Programs section on the home page for "Departmental Contact Information" for where such materials should be mailed in each department.

Items routinely uploaded are: unofficial copies of test scores such as the GRE, GMAT, MAT and TOEFL / IELTS, unofficial copies of transcripts, Statements of Purpose, any other materials required by your particular department; Financial Statements/Bank Statements for international applicants, as well as copies of passport pages for applicants and any dependents. Contact information for persons being asked to provide letters of recommendation may be entered, and then recommendations may be submitted online by those persons.

In addition, some departments may also have a departmental application form, which may be linked to the Graduate School online application.

Application Fee

The Graduate School require a non-refundable application fee of \$65.00 which must be submitted with the Application for Admission to Graduate Study. If you are applying to more than one program, a fee must be paid to each program. McNair and Fulbright Scholars should submit proof of participation in that program directly to the Graduate School in order to be considered for an application fee waiver. The application fee is subject to change without notice.

Transcripts

Students are required to submit official transcripts from all schools attended during their undergraduate study and also for all graduate work completed. Any student wishing to be

considered for Graduate School fellowships must submit to the department an official transcript for *every course* taken as an undergraduate and / or graduate student.

All transcripts submitted for admission to a degree program must be sent directly to the department to which you are applying. See departmental contact information for complete mailing address.

Students applying for nondeclared admission are only required to send one official transcript showing either a bachelor's, master's or Ph.D. earned. They should be sent directly to Graduate School Admissions - Nondeclared, 1263 Lincoln Drive Room 310, Mailcode 4716, SIU, Carbondale, IL 62901. Any transcripts submitted in person must be received by the student directly from the institution attended, and must be submitted to the Graduate School in a sealed envelope.

Transcripts submitted will not be returned nor forwarded to other institutions.

In accord with the Family Education Rights and Privacy Act of 1974, no non-Southern Illinois University person, firm, or agency may have access to an applicant's or a student's credentials without written consent of the individual concerned. Graduate students shall be permitted to examine their own records upon request. Such requests should be made by the student to the dean of the Graduate School.

Test Scores

The Graduate School does not require any graduate tests for admission. (However, if you intend to apply for a fellowship you will need a standardized test to qualify.) Individual departments may require, at their discretion, the GMAT, GRE, MAT, or other appropriate standardized tests for admission. Check the website of the department to which you are applying or contact the department directly for more information. Information is also listed on the Graduate School home page under "Degree Program Information", but should be verified by the department.

Deadlines

While the Graduate School does not have an application deadline, many departments do. The deadlines may be as early as December 1st for the following fall semester. Please check the department to find out what application deadlines they may have. These deadline dates are also listed under "Degree Program Information" on the Graduate School home page, but should be verified with the department. Regardless of any deadlines, applicants should submit materials to the department as far in advance as possible, to have the best chance to be considered for admission and funding.

Requirements

The admission requirements of the Graduate School and the department must both be met before the student is admitted to a degree program, and both the Graduate School and the department may specify admission conditions. Most departments require additional materials such as letters of recommendation; these should be forwarded directly to the department or submitted online by the recommender via ApplyYourself. The student will be informed by the Graduate School of the resultant admission status after this process has been completed.

Terms of Admission

Please note that some departments may not admit students for all semesters. Some allow admissions for fall semester only, some for summer only, and some for fall and spring terms only. For more information, check with the department to which you are applying or also check the Graduate School home page for "Degree Program Information" <http://gradschool.siu.edu/>.

Updating Admission for Future Terms

All admissions are for the specific term indicated. Should a student wish to change their admission to a future term, they must contact the Director of Graduate Studies in the department to which they are applying. The petition to change can only be granted within one calendar year of the initial admission term and only with the agreement of the department and the Graduate School. Official transcripts will be required for any course work completed since the original application. After one year, the student must submit a new application and new application materials.

Admission of Faculty Members

No one who holds a faculty appointment at any of the academic ranks—lecturer, instructor, assistant professor, associate professor, and professor—shall be admitted to a graduate degree program at any level, or be eligible to register for courses to be taken for graduate credit, in the graduate degree program in which the faculty member holds the appointment. If a faculty member has been admitted to a graduate degree program in some unit other than the one in which such appointment exists, no member of the faculty of the unit in which the appointment is held may be a member of that colleague's thesis committee, graduate program committee, dissertation committee, or any other examining committee. (See also faculty appointments in the section titled Financial Assistance.)

Admission of International Students

This school is authorized under federal law to enroll non-immigrant international students. A student from abroad is subject to all requirements for admission established by the Graduate School. For other information concerning international students, contact the Graduate School Admissions Office, 1263 Lincoln Drive, Room 310.

To allow ample time for visa and other departure procedures, the applicant should have an application and all supporting documents on file with the University no less than six months prior to the proposed entry date. Some departmental deadlines may require an even earlier application.

International students must be enrolled in a program leading to a graduate degree. They cannot be admitted as nondeclared students.

If the above requirements are satisfactorily met and the student is admitted to a degree program, the applicant will be required to certify that personally adequate financial resources will be available to undertake and continue in a program of study.

Test of English as a Foreign Language (TOEFL). All applicants whose native or first language is not English must take the TOEFL test no more than 24 months prior to the term for which the applicant is seeking admission. A minimum TOEFL score of 550 (paper); 80 (internet) is required for Graduate School ad-

mission; higher scores may be required for admission into specific degree programs. The IELTS exam is also acceptable (an overall band score of 6.5). The English language requirement may also be met by the iTep Academic Plus Exam (5.0) or the Cambridge English Exam (C1).

Exemptions to the TOEFL requirement are: (1) an applicant who has recently completed a bachelor's degree (four years attendance and completion of at least 100 semester hours of graded coursework) at an accredited institution in the United States; (2) an applicant who was awarded a master's degree at an accredited institution in the United States, who obtained a TOEFL score of at least 550/80 immediately prior to beginning graduate studies and who has been in residence in the United States continuously prior to application to SIU. Submission and verification of the earlier TOEFL score by the degree granting institution is mandatory.

Official TOEFL scores will be sent only to the Graduate School Admissions Office. A photocopy of the student's examinee score report should be uploaded with other materials in the online application.

Conditional Admission of International Students. Conditional admission of international students will be considered on an individual basis. The student must be applying to a program which requires only the Graduate School minimum of a 550 / 80 score on the TOEFL exam. Departments which require a higher TOEFL will not use this option; for those programs, the required score must be submitted in advance before an application will be considered. Please note that some programs will not to allow this option.

Before this option can be considered, the student must submit all required application materials to the department, including a recent TOEFL, however low. Departments may confer with the Graduate School Admissions Office with regards to using this admissions option. The student must be acceptable for admission based on all other academic criteria, with the possible exception of a graduate test score such as the GRE or MAT. Graduate admissions will coordinate with the CESL Office to arrange for the student's enrollment in CESL classes, and will issue a Training Language I-20, along with a conditional admission letter guaranteeing the student admission to the graduate degree program following successful completion of the required English language classes and submission of the required TOEFL score.

Academic Requirements. If a foreign-born applicant has recently completed a four-year bachelor's degree program at an accredited institution in the United States of America (minimum of 100 hours of graded coursework; proficiency credit, pass/fail or satisfactory/unsatisfactory grades are not counted), the applicant may be given the same consideration for admission to a graduate degree program as a United States citizen, in regard to both academic requirements and the use of English as a foreign language.

Applicants who have completed the equivalent of a four-year bachelor's degree at a recognized institution in any other country must have an academic record equivalent to a 2.70 grade point average ($A = 4.00$) on their last two years of study for admission to a master's degree program.

The determination of the applicant's grade point average

shall be the responsibility of the Graduate School.

Applicants for doctoral programs must meet the regular academic requirements for admission to a doctoral program.

Qualification for Assistantship with Teaching Duties. Every non-native English speaker assigned a graduate assistantship with teaching duties must pass an examination of oral English skill before undertaking classroom duties.

There are two parts to the exam: an interview and a teaching sample. The procedures for this exam are described below. The exam is given by a three person committee: a department representative, a Center for English as a Second Language representative, and a Graduate School representative.

The *interview* begins by asking the student general information. The interview covers reasons for choosing Southern Illinois University, the student's chosen field of study and major emphasis, plans for graduation and the future, and also information about the nature of the projected teaching assignment.

For the *teaching sample*, the student gives a 10 to 15 minute teaching presentation on a topic related to his/her assistantship duties. The interviewers act as potential students in the relevant setting, asking the kinds of questions likely to be posed by students in such a setting.

Upon completion of the oral exam, the interviewers rate the student independently on three sets of scales:

1. comprehension (how well the student understood what was asked)
2. speaking/fluency (how grammatically and fluently the student spoke)
3. pronunciation/accent (is the accent a barrier to communication)

The result of the oral interview is a consensus of all three interviewers, arrived at immediately upon comparison of the ratings.

There are three outcomes for the exam:

1. Pass, which allows the student to serve as a teaching assistant without restriction.
2. Conditional assignment, which limits the student's potential assignments. Limits are specifically tailored to the student's performance level, e.g., (for example: grading only, help sessions, laboratories under close supervision, one-on-one tutoring sessions, or to relatively advanced classes within the major subject).
3. Failure.

Students who fail, or are given a conditional assignment, may be re-tested the next semester or when potential teaching assignments change.

The Graduate School sends letters detailing the results of the examination to the student's academic department, and a copy is placed in each student's graduate assistant file.

REGISTRATION

Only those students who have been officially admitted by the Graduate School will be permitted to register.

Some degree programs require their students to have a Registration User Number (RUN) before registration. Please consult the designated major department about advisement. Nondeclared non-degree students are technically self-advised and may begin registration for the admitted semester after the registration period begins.

The *Schedule of Classes* for a particular semester is available online at <http://registrar.siu.edu/schedclass/index.html>.

Students are strongly encouraged to complete their registration before the beginning of classes. After the first week of classes, registration or program changes involving adding a course must have the written approval of the instructor of each course as well as the approval of the Graduate School and cannot use SalukiNet to register. Student must come to the Registration Office in Student Services Building Room 309 to register. A \$15 late fee is charged if not already registered.

Students should consult the SIU *Schedule of Classes* (<http://registrar.siu.edu/schedclass/index.html>) for each semester to find deadlines and dates for registration.

REGISTRATION METHODS

During the advance registration period (see registration calendar for dates in the SIU Schedule of Classes Information <http://registrar.siu.edu/calendars/index.html>) graduate students may register by several methods described below. Nondeclared students may use any of the methods. Degree-seeking students may be required by their departments to have a RUN number.

Web Registration

Nondeclared students and degree-seeking students will register online via SalukiNet

<https://salukinet.siu.edu/cp/home/displaylogin>. To begin the registration process, a student needs a network ID and a password. To claim your Dawg Tag go to <http://oit.siu.edu/salukitech/tutorials/net-id.php>. If you are not yet admitted to the Graduate School or do not have department approval to register or there is some other problem, you are ineligible to register.

Registration at the Graduate School

The Graduate Registration Center is located at Student Services Building Room 309. After the first week of classes, all students must register in person from 8:00 A.M. to 4:30 P.M., Monday through Friday. After the first week of classes, students are required to have the instructor's and the graduate dean's permission to add courses and must come to the center to process a registration or add. Drops are to be processed online through week 10 for full semester classes or drop deadlines for shorter classes. The drop deadline for full semester classes is week 2.

Late Registration

A late registration fee of \$15 shall be assessed to all students taking on-campus classes who register the first day of classes or later. This fee shall be non-refundable and cannot be waived, except when it is clearly shown that the late registration was caused by faculty or administrative action. Off-campus classes and registration in 599, 600, and 601 shall be exempt from such fee.

OTHER TYPES OF REGISTRATION IN GRADUATE COURSES

The following discussion concerns students who are either non-declared for various reasons or are undergraduates wanting to take graduate-level courses.

Nondeclared Students—Non-Degree

A person may apply for admission to the Graduate School as a nondeclared student when the applicant does not seek a graduate degree or has applied too late to be admitted to a degree program for the term for which admission is sought, or does not meet the minimum GPA requirements for admission to a graduate degree program at this time.

Students applying for admission as a Nondeclared graduate student who hope to obtain admission in a particular department at a later date, should meet with the Director of Graduate Studies in that department before registering for courses and seek information as to what courses they may take which would be counted towards degree requirements if they are admitted to the program later. Once the student is enrolled in the department, the department must petition the Graduate School that graduate courses completed while a student was nondeclared be counted toward fulfillment of degree requirements. The student will be subject to the rules and regulations of the Graduate School and the department concerned including the completion of at least 9 hours after being admitted to a master's degree program from nondeclared status.

Please note that nondeclared graduate students are not eligible for Graduate School fellowships or tuition waiver scholarships. Contact the Assistantship Office for details. Loans may be available for one 12 month period only, beginning when the student first enrolls in the nondeclared category and ending 12 months later. To determine eligibility, contact the Financial Aid Office.

Regular Nondeclared

A person who seeks admission as a regular nondeclared graduate student must have been awarded a bachelor's or higher degree. A student admitted as a regular nondeclared student may enroll in graduate courses as long as the student meets retention standards of the Graduate School. Please note that funding is not available after one year.

Temporary Nondeclared (classes taught off-site or web-based programs only)

A student may register as a temporary nondeclared student for one semester only. If the student wishes to enroll in graduate courses after this time period, the student must apply for and be admitted, either to a degree program or to regular nondeclared status. Complete admission materials must be submitted before subsequent registrations will be allowed.

Undergraduate Student Registration in Graduate Courses

Graduate Credit

An undergraduate student who wishes to register for a graduate course (400- or 500-level course) for graduate credit must file the standard application for admission to the Graduate School and submit a request for graduate credit. Forms are available in the Graduate School Admissions Office, 1263 Lincoln Drive

Room 310. If the student is academically eligible for admission to a degree program, the student will be allowed to register as an undergraduate for graduate courses for graduate credit when within 12 semester hours of completing requirements for the bachelor's degree. Permission of the instructor teaching the course must be obtained, and for 500-level courses, the permission of the Chair of the department offering the course.

An undergraduate student who meets these qualifications will be allowed to take graduate courses for graduate credit for one semester. If, at the end of the term, the student has not received the bachelor's degree, permission to enroll in graduate courses for graduate credit will be withdrawn until after the bachelor's degree has been conferred. Graduate credit cannot be granted once a semester is complete.

All requests for graduate credit as an undergraduate must be processed by the Graduate School by the 10th day of the semester for which the student wishes to register.

Undergraduate Credit

The Graduate School has the responsibility of approving the registration of undergraduate students in 500-level courses for undergraduate credit. Undergraduate students should only be encouraged to take 500-level courses if they are properly qualified. In dealing with these requests the following procedures must be followed.

The chair of the department offering the course, in collaboration with the instructor who is teaching the particular course, should forward a letter to the Assistant Dean of the Graduate School, 1263 Lincoln Drive Room 309, indicating their approval for this student to enroll in the 500-level course for undergraduate credit. Since such a request should only be made for superior students, the letters should include such information as: (1) undergraduate GPA (at least 3.0 required); (2) general description of the student's academic work; and (3) why this course would be beneficial. The student must go to the same office to obtain permission to enroll upon receipt of the letter by the Assistant Dean. If permission to enroll has been granted by the Assistant Dean, this will be indicated to the registration center. Accordingly, the student should bring the request form and add/drop slip to the Graduate School.

School of Law Courses

A graduate student may enroll for graduate credit in designated law courses if the student has permission of the dean of the School of Law and the dean of the Graduate School. Registration must be processed through the Graduate School and the grades will be reported on the Graduate School letter grade system (A, B, C, etc.).

A law student may register for law credit in graduate courses with approval of the dean of the School of Law and the graduate dean. Registration must be processed on School of Law forms and the grades will be reported on the Graduate School letter grade system.

A law student may not register for graduate courses for graduate credit unless the student has been admitted to the Graduate School in an approved concurrent program.

Residence-Center Credit

Credit earned at approved graduate residence centers will be entered on a student's record as on-campus credit earned at

SIU.

Students enrolled for credit in approved residence-center master's degree programs or in specific residence-credit courses must have been officially admitted (either in a degree program or nondeclared) to the Graduate School at SIU.

For information about specific programs and courses, the student should consult the appropriate department.

GRADUATE STUDENT COURSE LOADS

Financial Aid Awards

For financial aid *awarding* purposes, the following defines the number of semester hours for full-and half-time:

<u>Status</u>	<u>16-Week Semester</u>	<u>8-Week Session</u>
Full-time	12	6
Half-time	6	3

Graduate students enrolled in fewer than 6 hours for fall and spring semesters or 3 hours for summer session are not eligible to obtain student loans.

Enrollment Certification

The following semester hours of credit are to be used to certify full-time and half-time attendance of graduate students.

<u>Status</u>	<u>16-Week Semester</u>	<u>8-Week Session</u>
Full-time	9 or more hours*	3 or more hours
Half-time	6 hours	3 hours
Less than half-time	Less than 6 hours	Less than 3 hours

*Students who hold at least a quarter-time (25% FTE) graduate assistantship are considered as full-time if they have a minimum of 8 semester hours.

Minimum and Maximum Course Loads

Maximum coursework for graduate students is 16 hours each semester; 12 hours is considered normal load. The minimum and maximum loads for graduate students under various types of financial support are summarized below. To meet the minimum below, a graduate student must enroll in graduate-level course(s) (typically a 400- or 500-level course; certain 400-level courses are not available for graduate credit). Audit work will not qualify to meet the minimum load. However, audit work is calculated in determining a student's maximum course load. Exceptions to these minima and maxima are possible only with the written permission of the graduate dean. If graduate students' enrollments exceed the maximum or fail to meet the minimum of hours required by their type of financial support, their registrations will be withdrawn and financial support will be terminated.

<u>Type of Financial Support</u>	<u>16-Week Semester</u>		<u>8-Week Session</u>	
	<u>Max.</u>	<u>Min.</u>	<u>Max.</u>	<u>Min.</u>
No financial support	16		9	
Graduate Assistantships				
1/2 time appointment	16	8	9	3
1/4 time appointment	16	8	9	3
Full-time University employees	6		6	
Graduate Fellowships	16	9	9	3
Full Veteran's Benefits	16	9	9	3
SIU Scholarships	16	9	9	3

All University employees who wish to use the employee tu-

ition and fee waiver (faculty and staff) and are classified as graduate students must seek approval of the Graduate School to enroll in more than 6 semester hours of courses.

CONTINUING ENROLLMENT (601)

Registration in 601 (1 hour per semester) is required of all graduate students, whether in residence or not, who are not otherwise enrolled for fall or spring semester. Concurrent registration in any other course is not permitted.

Students registering for 601 are assessed only in-state tuition for the credit hour associated with the registration. Since student fees are not assessed for 601, the students are not eligible for the benefits of any other programs such as Recreation Center use, Health Service and Student Medical Benefits, Students' Attorney Program assistance, etc. Students needing the above benefits that require fees may instead register for additional research, thesis, or dissertation hours.

All students in a graduate program, but not enrolled in classes by the Friday of the first week of the fall or spring semester, will be registered in 601 by the Graduate School and charged tuition for 1 hour of 601. This hour will be dropped if the student subsequently enrolls in a class that semester or is granted a leave of absence by his/her graduate program by the 8th week of the semester. Each program has its own policy of whether and when to grant leaves of absence. Students on leave are not required to enroll in 601 for the period of leave, but a leave of absence does not affect the time-to-degree requirements. The requirement of 601 enrollment ends when a student passes the six-years to complete a master's degree, without completing the degree, the five-years of doctoral candidacy, or officially withdraws from a program prior to completion of the degree, or graduates. Students who are granted extensions to these time limits would be covered by this revised 601 policy. Summer sessions are exempt from the continuous enrollment requirement.

TRANSFER CREDIT

All graduate credits earned by a student in good standing at an accredited university, which have not been applied toward fulfillment of requirements for another degree, are eligible for transfer to that student's degree program, subject to general limitations of Graduate School regulations, residency requirements for doctoral degree programs, and acceptance by the student's major department. All transfer credits are subject to final review by the graduate dean. No transfer credit will be given for work bearing a grade below *B* or graded "satisfactory" without express permission of the graduate dean in response to written petition from the student's department. Credit towards a degree may be earned by online and off-campus courses at another accredited university. In the case of a master's degree, the student must earn at least half of the credit applied toward fulfillment of degree requirements in courses offered by SIU. Grades for coursework transferred to SIU from an outside university will not be calculated in the cumulative SIU grade point average.

The department recommending the graduate degree shall administer all required general and final examinations, and a member of the graduate faculty at SIU shall direct the student's master's thesis, required research paper, or doctoral dissertation.

GRADUATE GRADING SYSTEM

A	Excellent. 4 grade points.
B	Good. 3 grade points.
C	Conditional, not fully satisfactory. 2 grade points.
D	Poor, not satisfactory. 1 grade point.
F	Failure. 0 grade points.
S	Satisfactory. Used for thesis and dissertation credit and certain designated and approved 500-level research, internship, and practicum courses. Is not counted in calculating grade-point average.
U	Unsatisfactory. Used for thesis and dissertation credit and certain designated and approved 500-level research, internship, and practicum courses. Is not counted in calculating grade-point average.
W	Authorized withdrawal made through a program change. Work may not be completed. Refer to grade explanation below.
INC	Incomplete. Has permission of the instructor to be completed within a period of time designated by the instructor. Refer to grade explanation below.
DEF	Deferred. Used only for certain designated and approved 500-level courses of an individual continuing nature such as research, thesis, or dissertation. Refer to grade explanation below.
AU	Audit. No grade or credit earned. Refer to grade explanation below.
NR	Grade not recorded. A student's degree may not be posted to the transcript if a grade of NR exists on the transcript.
WU	Unauthorized withdrawal at instructor's discretion for student in good standing in class who stopped attending class during first 60% of the semester. This grade cannot be made up.

Grading System Explanation

Only courses for which the grades of *A*, *B*, *C*, or *S* have been received are acceptable in fulfillment of graduate degree requirements. The letter grades *A*, *B*, *C*, *D*, and *F* are included in computing the grade-point averages for academic retention. If a graduate student repeats a course with the permission of the graduate dean, both grades will be counted in the grade-point average. Graduate students will not receive graduate credit for Pass/Fail grades. They may not receive a grade of Pass/Fail in a 400-level course graded Pass/Fail on an elective basis.

400-level courses. Most 400-level courses may be taken for graduate credit. The Graduate Catalog will indicate those 400-level courses which may be taken for graduate credit. No grades of Pass/Fail may be given for a 400-level course for graduate credit. The instructor in a 400-level course which can be taken for graduate credit has the discretion to decide whether to require additional work for graduate credit.

Withdrawal. Except for the WU grade, a *W* indicates authorized withdrawal from a course prior to the date indicated in the Schedule of Classes for the term in which the course was taken. The student's record will reflect the courses from which the student had withdrawn with the symbol *W* and the week of withdrawal. Program changes to drop a course during the first two weeks of classes result in no entry being made on the student's record (consult the section titled "Withdrawal from Courses and from the University" for ad-

ditional information on withdrawal procedures and deadlines).

Incomplete. An INC grade should be assigned when, for reasons beyond their control, students engaged in passing work are unable to complete all class assignments. INC is not included in grade-point computation. An INC must be changed to a completed grade within one year from the close of the term in which the course was taken or graduation, whichever comes first. Should the student fail to complete the course within the time period designated, that is, one year from the close of the term in which the course was taken or graduation, whichever comes first, the Incomplete will be converted to a grade of *F* and the grade will be computed in the student's grade point average.

To complete the work from the original registration, a student should not register for the course again, but should complete the work for the original registration if the original registration is within the normal time limits established for the degree.

A contract for an INC grade must be established between the instructor and student at the time the INC grade is assigned.

An extension may be granted if the request for the extension is made within the first year and approved by the Dean of the Graduate School and the Provost.

Deferred. When the work is completed in a course for which *DEF* has been assigned, the grade is changed to a letter grade by the instructor, except in the case of theses and dissertations. When a thesis or dissertation has been submitted to the Graduate School as approved, the grade is automatically changed to *S*. If a thesis or dissertation is found unacceptable and the student is dismissed from the program, the grade of *U* is automatically assigned upon receipt by the Graduate School of the action dismissing the student.

Audit. A student registering for a course on an audit basis receives no letter grade and no credit hours. The student's registration must indicate audit registration and the same fees are paid as when registering for credit. During the first two weeks of a regular semester a student registered for a course for credit may change to audit status or vice versa through the official program change process. Thereafter, the change may not be made.

Changing of Grades. At the completion of a course the final grade assigned to a student is the responsibility of the instructor of the course. Grades given at the end of the course are final and may not be changed by additional work or by submitting additional materials; however, clerical errors in recording grades can be corrected. To correct a clerical error, the assigned instructors should submit a grade change card together with an explanation and justification of the grade change for the approval or disapproval of the department chair, the appropriate college dean, and the dean of the Graduate School. In cases of theses and dissertations, for which *DEF* grades are given, the Graduate School changes the *DEF* grades upon presentation and acceptance of the thesis and dissertation and receipt of the departmental approval papers. In courses for which INC and *DEF* grades have been given, the assigned instructors has the responsibility of determining the final grade to be assigned and notifying the Registrar's Office of the final grade by means of the grade change card.

WITHDRAWAL FROM COURSES AND FROM THE UNIVERSITY

Dropping Courses

Students officially registered for courses must withdraw formally. They must process an official withdrawal form. Outlined below are the procedures to be followed by graduate students when withdrawing from courses.

Deadlines for Dropping from a Course(s)

If Classes* <u>Meet for</u>	Deadline for <u>Withdrawal to</u> <u>Receive Full Refund</u>	Deadline <u>to Withdraw</u>
13–16 weeks	2nd week	10th week
9–12 weeks	2nd week	8th week
8 weeks	2nd week	5th week
7 weeks	1st week	4th week
4–6 weeks	1st week	3rd week
2–3 weeks	1st day	1st week
Less than 2 weeks	1st day	2nd day

*Students must drop a course or withdraw from the University by these deadlines to receive an account credit equal to a full refund of tuition and fees. Students who drop courses after the full refund deadline but remain enrolled in the University will not receive any refund. Students who withdraw from the University after the full refund period will receive an account credit up to week 4 (see chart below).

Students officially withdraw from courses through the program change process. This process starts with the academic adviser and is completed at the Registration Center. Graduate students may drop from a course through the 10th week of the fall and spring semesters. Drop deadlines for shorter sessions are correspondingly earlier (see schedule above). Official withdrawals during the first two weeks of the semester result in no entry being made on the student's record. Official withdrawals during the third through the 10th week of classes will result in the course listed on the student's record with the symbol *W* and the week of withdrawal. No drop from a course will be authorized after the 10th week of classes. It is the student's responsibility to insure that the drop process is officially completed.

Withdrawal from the University

A complete withdrawal from the University may be authorized by the graduate dean through the Friday of week 10 of classes. Students who withdraw from all classes will have a statement of withdrawal from the University entered on their records. Students who find it necessary to withdraw from the University after school has started and who are on campus should contact the Graduate School in person to initiate the withdrawal process. If they are unable to come to campus, they may email (gradregistration@siu.edu) the Graduate School asking that it process a withdrawal.

Students receiving a withdrawal from a full semester length course within the first two weeks will, under normal circumstances, receive a refund of all tuition and fees paid by the student. If the student has attended classes during the full refund period a portion of the financial assistance funds will be returned to the original source(s).

Students who withdraw after the full refund deadline will receive an account credit equal to the appropriate refund of tu-

ition and fees. An administrative fee will be assessed to all students who withdraw from the University and receive a refund beyond the full refund period. The amount of the fee will be a fixed charge of \$100.

REFUND SCHEDULE FOR WITHDRAWALS FROM THE UNIVERSITY (EFFECTIVE FALL 2009)

SIU Refund Policy

This chart is based on refunding for full semester length course

Percentage of Refund

	<u>Tuition</u>	<u>Fees</u>
Week One	100%	100%
Week Two	100%	100%
Week Three	50%	100%
Week Four	50%	0%
Week Five and after	0%	0%

No tuition refund will be given after week four; no refund of fees will be given after week three. Student fees are charged as a condition of enrollment.

Special consideration is extended to individuals who leave school for extended military service (6 months or longer). These students may choose to withdraw completely and have the withdrawal backdated to show no enrollment. If withdrawing during the third through tenth weeks of schools, these students may receive WMS grades in all classes, with the appropriate refund. When the withdrawal occurs after the tenth week, students will receive both grades and credit hours for the courses in which they are passing. In all instances, a copy of the military orders or a letter from the commanding officer is required for verification of impending military service. To be eligible for these benefits, students must remain in school to within ten days of their military reporting date.

Students in military service with the State of Illinois pursuant to the orders of the Governor have the right to receive a full monetary credit or refund for funds paid to any Illinois public university, college or community college if the person is placed into a period of military service with the State of Illinois in the event of state emergencies pursuant to the orders of the Governor and is unable to attend the university or college for a period of seven or more days. Students may elect to receive course credit for all of their courses rather than a refund.

All students seeking a withdrawal must contact the Graduate School in person or by mail. The effective date of the withdrawal, if granted, will be the student's last date of class attendance, provided the student completes the requirements for the withdrawal. Incomplete applications for withdrawal will be denied. Any student who fails to comply with the withdrawal procedures will receive grades for the semester and must satisfy the financial obligations for the semester.

Students who have a graduate assistantship and resign from their contract will not be automatically withdrawn from their courses. Students must complete the withdrawal process

RETENTION

Any graduate student whose cumulative grade point average falls below 3.00 will be placed on academic probation. Faculty of a degree program-unit may determine its own grade point aver-

age requirements (above the grade point minimum for retention in their particular program.) All 400- and 500-level courses taken after a student is admitted to the Graduate School are considered graduate level, unless the course is specifically designated, "Not for Graduate Credit", for all students. Grade point averages for doctoral students are based on graduate credit work completed at SIU after admission to the doctoral program. Grade point averages for master's degree students and nondeclared graduate students are based on all graduate credit work completed at SIU.

Any graduate student on academic probation whose grade point average remains below 3.0 for two consecutive semesters in which she or he is enrolled, excluding summer sessions, will be permanently suspended from the Graduate School, unless the department and the collegiate dean petition the graduate dean for an exception.

Graduate students who have a grade (or grades) converted from an INC to an F due to the INC grade policy which results in a retroactive change in GPA below 3.0 for the semester the course was taken, and any subsequent semesters, will be placed on Retroactive Academic Probation. The term Retroactive Academic Probation will appear on the students' transcripts to show that they were not in good standing in the Graduate School during the semester(s) effected.

GRADUATION

Graduation ceremonies are held each year at the end of each spring semester and fall semester. Degree candidates must apply for graduation with the Graduate School typically by the fourth Friday after the semester begins. Late graduation applications for extenuating circumstances beyond the student's control will be considered through the end of the eighth week of fall and spring semesters. No applications will be considered beyond the eighth week of fall and spring semesters and the fourth week of the summer term. Graduation application forms are available in the Graduate School and may be obtained by downloading from the Graduate School web page: <http://grad-school.siu.edu/>.

Candidates who do not meet graduation requirements will automatically be rolled to the next graduation term (May-to-August, August-to-December, December-to-May) with no additional fee, not to exceed one term. Candidates who fail to meet the degree requirements by the deadline for that graduation term will be removed from the pending graduation list. It will then be the student's responsibility to submit a new Graduation Application form by the deadline for the term in which they now plan to graduate. The new application will result in the assessment of another Graduation Application fee. Commencement ceremonies are held only in May and December. August graduates should consult the graduation application for commencement information.

Any financial obligations with the university must be cleared by the Bursar's Office before the release of diplomas and official transcripts. Diplomas are mailed to the address on the graduation application form within four to ten weeks after the end of the term.

A \$50.00 graduation fee is established for all persons receiving degrees. The fee is payable at the time of application or the fee will be charged to the student's account. Late applica-

tions will be assessed a \$75.00 Graduate Application fee. The fee does not cover the rental fee for the cap, gown, and hood, or the cost of the invitations. These items are ordered through the University Book Store in the Student Center and questions regarding them should be referred to the University Book Store. Doctoral and Masters students are required to pay a library fee of \$25.00. Theses and dissertations are submitted electronically (pdf) to UMI ETD Administrator. Research papers should be electronically submitted to OpenSIUC.

Submission of research papers, theses, and dissertations are due in the Graduate School office by the published deadline date. Contact the Graduate School for dates. Doctoral students must also submit the survey form of earned doctorates at the time the dissertation is submitted.

The Graduate School *Guidelines for the Preparation of Dissertations, Theses and Research Papers* is available at the Graduate School website (<http://gradschool.siu.edu/>). Since each program has chosen a manual style that must be used in conjunction with the Graduate School guidelines, the student should contact the department for additional departmental information.

Although attendance at commencement is not compulsory, students who wish to graduate in absentia must notify the Graduate School in advance. This information is needed for seating arrangements and for mailing purposes.

Posthumous Degrees

A graduate degree may be awarded posthumously if the student has substantially completed the work for the degree. This determination shall be the responsibility of the graduate dean in consultation with the administrative officers and faculty of the degree program in which the student had been enrolled.

RELEASE OF STUDENT INFORMATION AND ISSUANCE OF TRANSCRIPTS

The University follows a policy for release of student information in compliance with federal regulations. More specific information may be obtained from the Registrar's Office or from the Graduate School.

A transcript of the student's official educational record is issued by the Registrar's Office under the following conditions: a transcript is sent, issued, or released only upon a student's request or explicit permission, except that such permission is not required when the University faculty and administrative officials or other educational institutions request transcripts for official purposes.

In addition, requests will be honored from a philanthropic organization financially supporting a student and from a recognized research organization conducting educational research provided the confidentiality of the transcript is protected. A transcript will be issued directly to a student upon request. The transcript will have the statement, *Issued to the Student*, stamped on its face. Transcripts will be sent to recipients other than the student as requested in writing by the student. A transcript fee of \$5.00 will be payable in advance for every transcript the student requests. A transcript will not be sent, issued, or released if a student owes money to the University as verified by the Bursar's office.

FINANCIAL ASSISTANCE

Financial assistance is available to qualified students in all fields of study in the form of (1) graduate assistantships where one serves as a classroom teacher or assistant, as a research assistant, or as an administrative assistant, (2) fellowships or traineeships (3) scholarships, and (4) loans. There are basic regulations that relate to these awards. Students should make application for the graduate assistantships, fellowships or traineeships through the department to which they have been admitted. Information and application forms for the tuition scholarship program may be obtained from the Graduate School website: <http://gradschool.siu.edu/index.html>.

Students should be sure that their applications for admission are complete including the submission of required transcripts to the Graduate School to assure consideration for an award.

Graduate assistant appointments, graduate fellowships, and most traineeships include a tuition scholarship, but fees must be paid by the student. If a department has not established its own financial aid time limits, the following Graduate School time limits will apply. A student may receive no more than two calendar years of graduate-student support while a master's level student. A student may receive no more than four calendar years of graduate-student support while a doctoral-level student. Students directly admitted into a doctoral program from their bachelor's degree can receive up to five calendar years of graduate student support. The maximum number of years of graduate-student support for students seeking any combination of graduate degrees is six calendar years of graduate student support unless a specific exception based on the student's programmatic needs is granted by the graduate dean. These time limits apply to assistantships, fellowships, traineeships, and other similar awards and appointments administered by the University, regardless of source of funds. Students who are awarded graduate assistantships, fellowships, or traineeships, but who have not furnished official proof of their most recent degree to the Graduate School shall be considered to be on term appointment for one semester only. No one will be appointed to a second term until an official transcript indicating receipt of the degree is received in the Graduate School.

Acceptance of an offer of financial aid (such as a fellowship, traineeship, or assistantship) for the next academic year by an actual or prospective graduate student completes an agreement which both student and Graduate School expect to honor. In those instances in which the student accepts the offer before April 15 and subsequently desires to withdraw, the student may submit in writing a resignation of the appointment at any time through April 15. However, an acceptance given or left in force after April 15 commits the student not to accept another offer from another institution without first obtaining a written release from the institution to which a commitment has been made. Similarly, an offer by an institution after April 15 is conditional on presentation by the student of the written release from any previously accepted offer.

GRADUATE ASSISTANTSHIPS

Graduate assistantships (GAs) are available in a variety of places across campus, from academic departments and research centers to administrative and service units. This type of appointment comprises the largest number of awards offered

by the University. A graduate assistant must be a registered student in a degree program. Nondeclared students are eligible for graduate assistantships for one semester only with appropriate approval.

For these appointments, students should inquire directly to the chair of the department to which they have been admitted or to the appointing officer of a research center or administrative or service unit. Information about the criteria used to select GAs and to assign their responsibilities may be obtained by contacting the chair of the department, the administrator of a research or service unit, or the Graduate School.

The average GA appointment is 50% appointment (20 hours per week) and lasts for one academic year (9 months). There are also some 25% appointments requiring 10 hours per week. A student may hold two simultaneous quarter time (25%) appointments on campus without special approval. GA appointments may be either on a semester-pay basis or a fiscal-pay basis.

During the fall and spring semesters, appointments of at least 25% qualify for a 16-hour tuition scholarship. GAs on a graduate assistantship contract during the summer semester, qualify for an 9-hour tuition scholarship. The graduate assistantship appointment must be for at least 75% of the academic semesters (13 out of 17 weeks for the fall and spring semesters and 6 out of 8 weeks for the summer semesters). If a student is appointed for less than a full academic term on a fiscal pay basis, the appointment will not carry a tuition scholarship. A GA holding an appointment for the full length of fall and spring semesters consecutively will be eligible for a 9-hour non-working tuition scholarship for the summer session immediately following.

Salary schedules for graduate assistantships vary from unit to unit. For the current graduate assistantship salary schedule please refer to: <http://ospa.siu.edu/apply/budget-preparation/rates.html>. Generally doctoral students are paid higher rates than master's students. Information about the specific conditions of the appointment should be directed to the department or unit making the appointment.

In the best interests of both the University and students, academic departments should monitor outside employment and intervene in those cases where outside employment results in problems. Toward this end, it is within the rights and responsibilities of a department: 1) to require that graduate assistants holding outside employment notify their department, so that their performance can be monitored; 2) to make the relinquishing of outside employment a precondition for the continued enrollment of, and/or availability of assistantships to, students whose academic or assistantship performance has been rated Unsatisfactory; and 3) to cancel or not renew the assistantship contracts of those students whose assistantship performance is rated Unsatisfactory and who also hold and do not discontinue outside employment. Graduate students can appeal departmental decisions regarding outside employment and academic/assistantship status through the University's standard routes of appeal, or the grievance procedure in the GA United contract.

Dissertation Research Assistantship Awards

Dissertation research assistantship awards are designed for superior students who are in the dissertation preparation stage

of their graduate education. Selection is based on a competition primarily considering the student's academic research and quality of the dissertation prospectus. The recipient of a dissertation research assistantship must be officially admitted to candidacy by the beginning of the award. Failure to be admitted to candidacy by the beginning of the award will result in the award's revocation. The award is for a maximum of 11 months and provides a monthly salary and a tuition scholarship.

There is a service requirement, with the specific duties to be assigned by the chairperson of the department. The student must be enrolled for six graduate credit hours. The student holding such an award is expected to resign the award at the time the dissertation is submitted to the Graduate School if this comes prior to three weeks before the end of the time period for the award. Contact academic department for application material.

GRADUATE INTERNSHIPS

The graduate internship provides an educational experience for students at either the master's or doctoral level who wish or are required as a part of their program of studies to devote their primary effort toward applied activities in an academic program or a community-based agency or business under the direct supervision of a qualified representative of the host agency or business. Such internship activities may be unpaid or paid. Paid internships are externally sponsored and include the following categories: (a) paid through the University as graduate assistants; (b) paid by an agency or business as an employee; or (c) paid by an agency or business as a consultant. Requests for information should be directed to one's department.

TRAINEESHIPS

Individual departments often are able to provide traineeships. Information about these awards should be directed to the department to which one has been admitted or is seeking admission.

GRADUATE FELLOWSHIPS

The Graduate School offers a number of graduate fellowships. The number varies depending on the funds available for these awards each year. All awards of this type are highly competitive based upon scholarship, scores on standardized tests, and potential for success in graduate study.

Master's Fellowship Program

The Master's Fellowship is a one-time award at the master's degree level that is designed for those nominees who show the greatest promise for scholarly and professional achievement in their respective disciplines. The fellowship will be awarded for three semesters, fall, spring, and summer for a total of eleven (11) months. The Master's Fellowship pays a monthly stipend (excluding Summer Intersession May 16 thru June 15) "at the Graduate School rate" and provides a tuition scholarship for fall, spring, and summer. Master's students are not allowed to hold more than two calendar years (24 months) of financial support of all types. Fellows may not hold jobs outside the University, since the purpose of the fellowship is to (provide students with an opportunity to devote full time to their graduate studies and research rather than work part time at a job and part time at studies.) Fellowship recipients will be assigned a ten-hour per week research assignment that will provide professional development

opportunities for the student and be of value to the department. Fellowship recipients must remain on campus as fulfillment of their award, except with permission by the graduate dean.

Applications for these awards should be made by early January preceding the academic year for which the award is desired. Students should check with their academic departments for exact dates. Application forms and information about the awards may be obtained by contacting the department to which one has been admitted or is seeking admission or on the Graduate School website.

Doctoral Fellowship Program

The Doctoral Fellowship is designed for those nominees who show the greatest promise for scholarly and professional achievement in their respective disciplines at the doctoral level. It is renewable for another year contingent upon eligibility. Fellowships will be awarded for three semesters, fall, spring, and summer for a total of eleven (11) months. The Doctoral Fellowship pays a monthly stipend (excluding Summer Intersession May 16 thru June 15) "at the Graduate School rate" and provides a tuition scholarship for fall, spring, and summer. Doctoral students have a limit of four calendar years (48 months) of financial support of all types. Doctoral students are also limited to two years of financial support of any combination of doctoral fellowship or dissertation research assistantship. Morris fellow holders are ineligible to apply for a Doctoral fellowship award. Fellows may not hold jobs outside the University, (since the purpose of the fellowship is to provide students with an opportunity to devote full time to their graduate studies and research rather than work part time at a job and part time at studies.) Fellowship recipients will be assigned a ten-hour per week research assignment that will provide professional development opportunities for the student and be of value to the department. Fellowship recipients must remain on campus as fulfillment of their award except with permission by the graduate dean.

Applications for these awards should be made early January preceding the academic year for which the award is desired. Students should check with their academic departments for exact dates. Application forms and information about the awards may be obtained by contacting the department to which one has been admitted or is seeking admission or on the Graduate School website.

Delyte and Dorothy Morris Doctoral Fellowship Program

The Delyte and Dorothy Morris doctoral fellowships have been established by Southern Illinois University to honor a distinguished former president and his wife. During Dr. Morris' tenure as president (1949-71) the University grew to be a comprehensive research institution and established doctoral programs in twenty-two fields, now twenty-six fields.

The Morris Doctoral Fellowship is designed for those nominees who are new to Southern Illinois University (SIU). This fellowship is intended for applicants who possess exceptional credentials as indicated by high scholastic standing, excellent scores on standardized tests, outstanding recommendations, and evidence of significant potential for research and publication.

The Morris Doctoral Fellowship is a five-year financial support package. The Graduate School provides a 12 month 50% research fellowship award for the first three years and the de-

partment provides a 12 month 50% graduate assistantship for the last two years. The Morris Fellowship pays a monthly stipend amount that is above the Doctoral Fellowship stipend rate, with an annual \$1,000 book/travel allowance for the first three years. A tuition scholarship will be awarded for fall, spring, and summer semesters for the term of the award. Fellows may not hold jobs outside the University, since the purpose of the fellowship is to provide students with an opportunity to devote full time to their graduate studies and research rather than work part time at a job and part time at studies. Fellowship recipients will be assigned a ten-hour per week research assignment that will provide professional development opportunities for the student and be of value to the department. Fellowship recipients must remain on campus as fulfillment of their award except with permission by the graduate dean.

Applications for these awards should be made early January preceding the academic year for which the award is desired. Students should check with their academic departments for exact dates. Application forms and information about the awards may be obtained by contacting the department to which one has been admitted or is seeking admission or on the Graduate School website.

Graduate Dean's Fellowship Program

The Graduate Dean's Fellowship is designed for traditionally underserved individuals who have overcome social, cultural or economic conditions that have adversely affected their educational progress. Awards will be given to students who are qualified by the usual indicators of promise for success in graduate study.

The Graduate Dean's Fellowship is a two-year award, and it is given to fully admitted students. In Year One, the award is for a maximum of 11 months (fall, spring and summer) and provides a monthly salary and a tuition scholarship. The student must enroll for a minimum of nine graduate credit hours for fall and spring semesters and three graduate hours for summer. The recipient will be assigned a ten hour per week research assignment that will provide professional development opportunities and will be of value to the department. Year Two, the recipient will be on a nine month (fall and spring) 50% assistantship appointment with the department. The student is required to enroll for a minimum of nine graduate credit hours for fall and spring semesters, or optional summer enrollment of three graduate credit hours. A tuition scholarship is awarded for fall, spring, and summer for both years. Recipients are responsible for fees. While on fellowship the award recipient will not hold any other employment inside or outside the University. Application requests for this award should be directed to the Graduate School or to the department. Application deadline is mid-February preceding the academic year for which the award is desired.

Proactive Recruitment of Multicultural Professionals for Tomorrow (PROMPT) Fellowship/Assistantship Program

The PROMPT Program (Proactive Recruitment of Multicultural Professionals for Tomorrow) is an initiative developed by the Graduate School of Southern Illinois University (SIU) to increase the number of individuals receiving advanced degrees in the United States from families which have traditionally not had access to the opportunities of higher education and

who, through his or her life and/or cultural experiences, have unique and potentially positive contributions to make to the program, the discipline, and in the larger academic community. The Graduate School, in alliance with participating academic departments, will provide financial assistance packages to competitive, fully admitted students to pursue advanced study at SIU through an assistantship appointment. The PROMPT Fellowship/Assistantship offers a two-year assistantship appointment with a monthly stipend and a tuition scholarship. The student must commit 20 hours per week in teaching or research activities in the academic department during fall and spring semesters for both years. Recipients are responsible for fees. Application requests for this award should be directed to the Graduate School or to the department. Application deadline is mid-February preceding the academic year for which the award is desired.

TUITION SCHOLARSHIPS

Domestic Students

A limited number of tuition scholarships are awarded each semester to graduate students. This scholarship is a scholastic award based on a student's undergraduate academic record. The award is for remission of tuition; fees must be paid. Students may receive a tuition scholarship for a maximum of three semesters during their enrollment in the University.

To be eligible the student must be admitted to the Graduate School and to a department, and the student may not hold another University appointment, which provides a tuition scholarship (i.e. graduate assistantship, fellowship). Tuition scholarship recipients must enroll for a minimum of 9 graduate credit hours for fall and spring semesters (3 graduate credit hours in summer).

Application forms are available by clicking the link at the top of this page, in the Graduate School office or on our web site at http://gradschool.siu.edu/_common/documents/TuitionWaiver.pdf. Students should submit application forms at least one full semester preceding the semester for which the tuition scholarship is requested. Deadline dates are as follows: April 15 for summer session, July 15 for fall semester, and November 15 for spring semester. Applicants must reapply each semester.

International Students

As an international student, you will need to contact the Center for International Education about applying for this scholarship. A limited number of tuition waivers are available to international students who have completed at least one full year at SIU. These awards are granted on a competitive basis, and the limited number means that many qualified students are unable to secure them. Applications are generally available at the end of each spring semester at Center for International Education, 425 Clock Tower Drive, Woody Hall. Guidelines are provided with the applications.

FINANCIAL AID OFFICE

Other forms of financial assistance including part-time employment on and off campus, cooperative work-study programs, summer employment, and student loan funds are available on the Financial Aid office website at <http://fao.siu.edu/>.

EXTERNAL SUPPORT FOR GRADUATE STUDY

Fellowships, grants-in-aid, scholarships, and other similar awards for the support of graduate students are available from many sources outside the University. Students are encouraged to apply for such awards. Information concerning appropriate external sources of support may be obtained from the OSPA-Office of Sponsored Projects Administration or from department chairs or directors of graduate studies of the student's major department.

FACULTY APPOINTMENTS

No student in a graduate degree program shall be appointed to any full-time faculty position in the department (or equivalent unit) while enrolled in the unit as a student, with the sole exception that a student who has already been admitted to candidacy for the doctoral degree may be granted a term appointment as an instructor in the unit while so enrolled. Such a term appointment shall not be renewable beyond a period of one year.

SATISFACTORY PROGRESS POLICY FOR GRADUATE STUDENTS

Purpose

The Federal Government, the States, and Southern Illinois University (SIU) have invested large sums of money in order to provide financially needy students the opportunity to obtain a post-secondary education. Financial aid recipients are responsible for using the funds provided in an acceptable manner. Therefore, a student who wishes to benefit from the receipt of financial aid funds must maintain "satisfactory progress" as defined in this policy.

Authority

The U.S. Department of Education Student Financial Aid regulations (34 CFR 668) require that institutions of higher education establish and maintain reasonable standards to measure whether students applying for financial aid are making satisfactory academic progress toward degree completion. A student who does not meet these standards is not eligible to receive federally-funded financial aid. In most instances, SIU shall make these standards applicable to all state and institutional aid programs for the purpose of maintaining a consistent and reasonable financial aid policy. However, nothing in this policy shall be construed as a reduction of external requirements by other federal, state, public, or private agencies when they award or control financial aid. **Non declared graduate students are only eligible to be considered for a Federal Direct Stafford Loan during one twelve-month period while preparing for admission into a graduate degree program.**

Satisfactory Progress Standards

SIU requires that a student be making "satisfactory progress" toward a degree if he or she wishes to receive financial aid funds. A graduate student is making "satisfactory progress" toward a degree if successfully meeting each of three academic

standards:

- 1. Minimum SIU Percentage of the Cumulative Attempted Credit Hours that must be Completed:** A graduate student is expected to have completed a minimum of 67% of the cumulative attempted credit hours at SIU.
- 2. Maximum Credit Hours Attempted:** A graduate student enrolled in a program leading to a Masters Degree is expected to complete the degree before accumulating seventy five (75) credit hours attempted including both SIU and accepted transfer credit hours. A graduate student enrolled in a program leading to a Masters of Fine Arts Degree is expected to complete the degree before accumulating ninety (90) credit hours attempted including both SIU and accepted transfer credit hours. A graduate student enrolled in a program leading to a Doctoral Degree is expected to complete the degree before accumulating one hundred (100) credit hours attempted including both SIU and accepted transfer credit hours.
- 3. Minimum Grade Point Average:** A graduate student must maintain a cumulative grade point average of 2.0 at the end of each spring semester and be in compliance with the University's policy concerning academic standing, grades, and grade point average as defined under the topic "Retention" and all other provisions in the current Graduate Catalog. A graduate student who is academically suspended from the Graduate School is not making satisfactory progress.

The academic records of all aid recipients will be reviewed annually at the end of the spring semester to determine continued aid eligibility. A graduate student who does not meet any one of the three standards set forth above is not maintaining "satisfactory progress" toward a degree and will be determined ineligible for financial aid.

Notification of Status

It shall be the responsibility of the Graduate School to publish this policy and to notify by letter any graduate student who is no longer eligible to receive financial aid funds. Said notice shall be addressed to the student's most current permanent address on file with the University. ***IT SHALL BE THE RESPONSIBILITY OF THE STUDENT TO INFORM THE UNIVERSITY OF A CORRECT PERMANENT ADDRESS AT ALL TIMES.***

Reinstatement

Students will have their eligibility to receive financial aid reinstated after having reached the level of satisfactory progress required of them by this policy. They may achieve this status by receiving passing grades for courses previously incomplete or incorrectly recorded as withdrawals or failing grades and/or earning sufficiently more than the required percentage of completed hours.

Appeals

Any student shall have the opportunity to appeal, in writing, to explain “mitigating circumstances”. The appeal should be sent to the Graduate School, with endorsement of the student’s academic program, within 30 days of the notice of termination. The Graduate School will review the “mitigating circumstances” documented in the appeal and provide a written decision within 20 days after the receipt of the appeal. The Graduate School will provide written notification to the Financial Aid Office concerning all graduate students who have been granted an exception for mitigating circumstances.

Definitions

Attempted credit hours shall be defined as the total SIU hours for which the student has been enrolled.

Maximum credit hours attempted shall be defined as the total SIU hours for which the student has been enrolled at SIU and the total accepted transfer credit hours.

Credit hours completed shall be defined as the total number of academic credit hours which a student has completed. Failing grades, incompletes, withdrawals, audits, and remedial courses that do not count toward a degree shall not be considered as credit hours completed. Deferred grades count as credit hours completed.

Eligible students shall be defined as those students who are admitted to the Graduate School and to a specific degree program. All other students are not eligible for financial aid except for non declared graduate students who are only eligible to be considered for a Federal Direct Stafford Loan during one twelve-month period while preparing for admission into a graduate degree program.

Mitigating circumstances are the reasons that explain why the student has not met the Satisfactory Progress standards and can include medical reasons, family crisis, personal problems, or other circumstances which adversely affected student performance.

Graduate shall be defined as a student who is seeking a Masters or a Doctorate degree.

Tuition and Fees

Tuition and fees are established by the Board of Trustees and are subject to change whenever conditions necessitate. All assessments are on a perhour basis. Current tuition and fee can be found on: <http://gradschool.siu.edu/cost-aid/tuition-fees.html>.

The fees which have been established by the Board of Trustees are payable by all students unless they are specifically exempted by the Board of Trustees. All fees are considered to be institutional in nature and require payment regardless of whether or not the student receives direct benefits or is in a location which permits access to such benefits.

Student fees include: STS grant, student attorney fee, Student Center fee, student activity fee, student recreation fee, campus recreation fee, athletic fee, revenue bond fee, and student medical primary care and extended care (insurance) benefit fees, revenue bond, mass transit fee, Info Tech, Student Service Building, and Facilities Maintenance. Additional fee information is available on the Registrar's website <http://tuition.siu.edu>. Student fees include the following.

- **Student to Student (STS) Grant Program Fee.** Funds a student grant program. The fee is payable by undergraduate students only; those who do not wish to participate in the program may seek a refund of the fee by submitting a request, in writing, to the Registrar's Office within ten days of the date of payment of fees.
- **Student Attorney Fee.** Supports the budget of the Students' Attorney Program.
- **Student Center Fee.** Provides funds for the operation of the Student Center.
- **Student Activity Fee.** Provides funding for student organizations and activities on campus.
- **Student Recreation Fee.** Provides funds for operation of the Student Recreation Center and associated programs.
- **Athletic Fund.** Provides partial funding for the university intercollegiate athletic program.
- **Campus Recreation Fee.** Funds recreational facilities and programs external to the Student Recreation Center.
- **Student Medical Benefit Primary Care and Extended Care (insurance) Fees.** Provides funding for comprehensive student health programs including emergency service; hospitalization; specialty, primary, emergency dental; counseling services; and prevention program. A student who pays these fees is entitled to full medical benefits at the Student Health Programs. Students who have comparable insurance coverage may be eligible for a refund of the Student Medical Benefit Extended Care (insurance) fee. A refund must be applied for within the first two weeks of each fall and spring semester and within the first week of the summer session by contacting the Student Health Center Insurance Department.
- **Revenue Bond Fee.** Replaces funds which were previously obtained from tuition payments and used to underwrite the funded debt operations of the Student Center and university housing.
- **Mass Transit Fee.** Provides funding for bus transportation to oncampus and certain Carbondale locations.
- **Information Technology Fee.** Provides funding for maintenance and improvements to the Information Technology network as well as funding for a new student information system.
- **Student Media Fee.** Provides funding for the operation of the *Daily Egyptian* newspaper.
- **Student Services Building Fee.** Provides funding for the Student Services Building.
- **Facilities Maintenance Fee.** Provides funding to partially cover the costs of utilities and the maintenance and improvement costs to the University facilities.
- **Green Fee.** Provides funding for on-campus renewable energy, energy efficiency, and sustainability projects and research.

Additional Fee Information

1. Students should refer to the Registrar's website: <http://tuition.siu.edu> for specific fee information.
2. Graduate, medical, and law students are not required to pay the Student-to-Student Grant Program Fee.
3. Students taking courses off-campus, at approved residence centers, or online pay tuition and different fees as noted at <http://tuition.siu.edu>.
4. Graduate students registering for Continuing Enrollment, course 601, pay only tuition for credit associated with that course registration. Refer to the section titled Continuing Enrollment Requirement previously in this chapter for the regulations governing this fee.
5. In addition to the above fees, there is a graduation fee of \$50.00 (\$75.00 for late graduation applications) and a Library fee of \$25.00. If copyright is desired, an additional fee of \$55.00 is required.
6. Other charges which students may incur are those for departmental field trips, library fines, and excess breakage. Also, students taking a course involving use of materials, as distinct from equipment, will ordinarily pay for such materials.
7. Students registering for courses on an audit basis pay the same tuition and fees as though they were registering for the courses for credit.
8. Out-of-state students will find the official University regulations governing determination of residency status for assessment of tuition later in this chapter.
9. Incoming students whose permanent home address is in Arkansas, Indiana, Iowa, Kentucky, Missouri, Tennessee or Wisconsin, will pay an alternate tuition rate equivalent to the instate rate
10. An identification card fee of \$10.00 will be charged to all first-time SIU students who register for on-campus credit. This is a one-time charge. Replacement ID cards will incur a \$20.00 fee. For additional information contact the Student Center ID Card Office.

11. A \$150.00 nonrefundable Matriculation Fee will be assessed to all new, international graduate students taking on-campus classes to cover the costs associated with their orientation to campus.
12. New High Achiever Tuition Rate for new graduate students: Starting with the Fall 2016 semester, non-resident new first-time graduate students who demonstrate high academic achievement on the GRE, GMAT, or MAT graduate school entrance exams will pay an alternate tuition rate of 1.0 times the current in-state graduate tuition rate. See <http://tuition.siuc.edu/highachievers2.html> for more information.

Payment and Refunding of Tuition and Fees

Tuition and fees are payable each semester during the academic year. Students who register in advance receive a Statement of Account in the mail and may pay either by mail or in person at the Bursar's office, by the deadline date, in accordance with instructions accompanying the statement. Students who register at the start of a semester must pay tuition and fees according to the schedule which is in effect at that time. More detailed information is on the Registrar's website: <http://tuition.siuc.edu>.

Students who process a program change which places them in a different tuition and fee category than the one for which they originally registered will be billed additional tuition and fees when appropriate. If the change places them in a smaller tuition and fee category and if they have processed the program change within the first two weeks of the semester, they will receive an automatic credit to their account.

A credit for tuition and fees will be made to student accounts for students who officially withdraw from school by the withdrawal deadlines listed later in this chapter. They will receive a refund check in approximately four weeks after the withdrawal has been received by the Registrar's Office. No credit for tuition and fees is made for withdrawal occurring after the deadlines, except as described in the next paragraph.

Special consideration is extended to individuals who leave school for extended military service (6 months or longer). Students will be refunded full tuition and fees paid if they enter military service during the first five weeks of school. If students withdraw during the sixth through tenth weeks of school, they will be refunded half of the paid tuition and fees, and they will receive one-half credit without letter grades for the courses in which they were receiving a passing grade at the time of withdrawal. When the withdrawal occurs after the tenth week, students will receive no refund, but will receive both grades and credit hours for the courses in which they are passing. In all instances, a copy of the military orders or a letter from the commanding officer is required for verification of impending military service. To be eligible for these benefits students must remain in school to within ten days of their military reporting date.

Determination of Residency Status

For the purpose of these regulations an *adult* is considered to be a student eighteen years of age or over; a *minor* student is a student under eighteen years of age. In all cases where records establish that the person does not meet the requirements for Resident status as defined in these regulations the nonresident status shall be assigned.

Determination of residence status of each applicant for admission to the University is made at the time of admission. A student may petition for change to Illinois residency by contacting the Graduate Registration office to obtain the necessary forms and information. A student may be reclassified at any time by the University upon the basis of additional or changed information. However, if the University has erroneously classified the student as a Resident, the change in tuition shall be applicable beginning with the term following the reclassification; if the University has erroneously classified the student as a nonresident, the change in tuition shall be applicable to the term in which the reclassification occurs, provided the student has filed a written request for review in accordance with these regulations. If the University has classified a student as a Resident based on false or falsified documents, the reclassification to nonresident status shall be retroactive to the first term during which residency status was based on the false or falsified documents.

Adult Student. An adult, to be considered a Resident, must have been a bona fide resident of the State for a period of at least six consecutive months immediately preceding the beginning of any term for which the individual registers at the University, and must continue to maintain a bona fide residency in the State, except that an adult student whose parents (or one of them if only one parent is living or the parents are separated or divorced) have established and are maintaining a bona fide residence in the State and who resides with them (or the one residing in the State) or elsewhere in the State will be regarded as a Resident student.

Minor Student. The residence of a minor shall be considered to be, and to change with and follow:

- a. That of the parents, if they are living together, or the living parent, if one is deceased; or
- b. If the parents are separated or divorced, that of the parent to whom the custody of the person has been awarded by court decree or order, or in the absence of court decree or order, that of the parent with which the person has continuously resided for a period of at least six consecutive months immediately preceding registration at the University; or
- c. That of the adoptive parents, if the person has been legally adopted and, in the event the adoptive parents become divorced or separated, that of the adoptive parent whose residence would govern under the foregoing rules if that parent had been a natural parent; or
- d. That of the legally appointed guardian of the person; or
- e. That of the *natural* guardian, such as a grandparent, adult brother or adult sister, adult uncle or aunt, or other adult relative with whom the person has resided and by whom the student has been supported for a period of at least six consecutive months immediately preceding registration at the University for any term, if the person's parents are dead or have abandoned said person and if no legal guardian of the person has been appointed and qualified.

Parent or Guardian. No parent or legal or natural guardian will be considered a resident of the State unless said person (a) maintains a bona fide and permanent place of abode within the

State, and (b) lives, except when temporarily absent from the State with no intention of changing the legal residence to some other State or country, within the State.

Emancipated Minor. If a minor has been emancipated, is completely self-supporting, and actually resides in the State, the minor shall be considered to be a Resident even though the parents or guardian may reside outside the State. An emancipated minor who is completely self-supporting shall be considered to *actually reside in the State of Illinois* if a dwelling place has been maintained within the State uninterrupted for a period of at least six consecutive months immediately preceding term registration at the University. Marriage or active military service shall be regarded as effecting the emancipation of minors, whether male or female, for the purposes of this regulation. An emancipated minor whose parents (or one of them if only one parent is living or the parents are separated or divorced) have established and are maintaining a bona fide residence in the State and who resides with them (or the one residing in the State) or elsewhere in the State will be regarded as a Resident student.

Married Student. A nonresident student, whether male or female, or a minor or adult, or a citizen or noncitizen of the United States, who is married to a resident of the State, may be classified as a Resident so long as the individual continues to reside in the State; however, a spouse through which a student claims residency must demonstrate residency in compliance with the requirements applicable to students seeking Resident status. For example, a noncitizen student who holds a visa which on its face precludes an intent to reside in the United States is not entitled to instate residency through his/her marital status.

Persons without United States Citizenship. A person who is not a citizen of the United States of America who meets and complies with all of the other applicable requirements of these regulations may establish residence status unless the person holds a visa which on its face precludes an intent to reside in the United States.

Armed Forces Personnel. If a person is on active military duty in one of the Armed Forces of the United States and is stationed in Illinois, then the Board shall deem that person and any of his or her dependents Illinois residents for tuition purposes.

If a person is on active military duty in one of the Armed Forces of the United States and is stationed out-of-State, but he or she was stationed in this State for at least three years immediately prior to being reassigned out-of-State, then the Board shall deem that person and any of his or her dependents Illinois residents for tuition purposes, as long as that person or his or her dependent (i) applies for admission to the University within 18 months of the person on active military duty being reassigned or (ii) remains continuously enrolled at the University.

A person who is separated from active military service will be considered a Resident of Illinois immediately upon separation providing the person: (a) was a resident of the State at the time of enlistment in the military service, (b) became treated as a Resident while in the military by attending school at Southern Illinois University while stationed within the State, or (c) has resided within the State for a period of six months after separation.

State and Federal Penitentiary. A person who is incarcerated in a State or Federal place of detention within the State of Illinois will be treated as a Resident for tuition assessment purposes as long as said person remains in that place of detention. If bona fide residence is established in Illinois upon release from detention, the duration of residence shall be deemed to include the prior period of detention.

Minor Children of Parents Transferred Outside the United States. The minor children of persons who have resided in the State for at least six consecutive months immediately prior to a transfer by their employers to some location outside the United States shall be considered Residents. However, this shall apply only when the minor children of such parents enroll in the University within five years from the time their parents are transferred by their employer to some location outside the United States.

Dependents of University Employees. For the purposes of tuition assessment, all faculty and staff (including civil service employees), as well as their spouses and dependent children, shall be considered as resident students.

Dependents of Graduate Assistants and Fellows. The nonresident portion of tuition is waived for the spouses and dependent children of fellows, assistants and trainees who are appointed as fellows, assistants and trainees to the fullest extent permitted by their appointment.

Definition of Terminology. To the extent that the terms bona fide residence, independent, dependent, and emancipation are not defined in these regulations, definitions shall be determined by according due consideration to all of the facts pertinent and material to the question and to the applicable laws and court decisions of the State of Illinois.

A bona fide residence is a domicile of an individual which is the true, fixed, and permanent home and place of habitation. It is the place to which, whenever absent, the individual has the intention of returning. Criteria to determine this intention include but are not limited to year around residence, voter registration, place of filing tax returns (home state indicated on federal tax return for purposes of revenue sharing), property ownership, driver's license, car registration, vacations, and employment.

Procedure for Review of Residency Status or Tuition Assessment. A student who takes exception to the residency status assigned or tuition assessed shall pay the tuition assessed but may file a claim in writing to the appropriate official for a reconsideration of residency status and an adjustment of the tuition assessed. The written claim must be filed within 30 school days from the date of assessment of tuition or the date designated in the official University calendar as that upon which instruction begins for the academic period for which the tuition is payable, whichever is later, or the student loses all rights to a change of status and adjustment of the tuition assessed for the term in question. If dissatisfied with the ruling in response to the written claim made within said period, the student may appeal the ruling to the chancellor or his/her designee by filing with the appropriate official within twenty days of the notice of the

ruling a written request.

Applying for Illinois Residency. In order to qualify for in-state tuition at SIU a student must be a citizen or permanent resident of the U.S. and must be a bona fide resident of the state of Illinois for the six month period immediately preceding the start of the semester they wish to be classified as an Illinois resident. In order to qualify for in-state tuition you would need to be at least 18 years old at the time classes begin and move into Illinois and remain living in Illinois for six months prior to applying. You must also change your driver's license to an Illinois driver's license; register to vote in Illinois and, if, you are the sole owner of a vehicle you will be driving in Illinois, you must have it registered in Illinois. You will need complete an application for Illinois residency (http://admissions.siu.edu/_documents/IllinoisResApp.pdf), and include with the completed application any appropriate documentation as requested. Have the application notarized before you submit OR have your application notarized in our office (requires two picture id's) and submit copies of the documents listed below in order to be considered for in-state residency for tuition purposes.

The documents below are required and must be changed 6 months prior to the semester residency is being requested.

1. A copy of your Illinois driver's license or, if you do not drive, a copy of an Illinois ID Card.
2. A copy of proof you have registered to vote in Illinois. Permanent Residents do not need this.
3. If you drive a vehicle in the state of Illinois you must submit a copy of your vehicle registration, which is the card that your license plate sticker comes on. If you are the sole owner of the vehicle, it must be registered in Illinois.
4. Proof you have lived in Illinois for the six consecutive months immediately preceding the start of the semester. This may consist of one item per month of any of the following documents.
 - Bank statement with your name and Illinois address and date showing.
 - Pay check if you are employed in Illinois with your name and Illinois address and date showing.
 - Rent receipts with your name and Illinois address and date showing.
 - Utility bills in your name with your Illinois address and date showing.
 - A copy of your Lease with your name and the effective dates listed.
 - If none of the above then: Three notarized letters from Illinois residents attesting to your residency in Illinois for the six months before the semester begins.

The deadline to submit the Illinois Residency application and all documentation is the end of the first month of the semester. Submit all documentation to Graduate School Registration, Student Services Building Room 309A, 1263 Lincoln Drive Mail Code 4716, Carbondale, Illinois 62901; FAX: 618-453-4562.

University Employees

All full-time University employees who wish to use the employee tuition and fee waiver (faculty and staff) who are classified as graduate students must seek approval of the Graduate School to enroll in more than six semester hours of courses.

Faculty and Staff

Employees who are seeking a waiver of tuition, must apply for the waiver each term by completing an Application for Tuition Waiver form. A form may be obtained from Human Resources, Miles Hall, or from the Graduate Registration Office, Student Services Building 309. The form must be completed each term and returned to Human Resources, Miles Hall. The waiver benefit does not limit the number of credit hours that may be taken. The amount of the waiver will be credited to the student's account after the employment status has been verified and the application form has been processed.

Employees can phone the Graduate Registration Office (618-453-2969) for any questions regarding the registration process. Questions regarding the tuition waiver should be directed to Human Resources (618-453-6696).

Academic Grievances Policy/Procedures

Graduate Student Academic Grievance Policy

Graduate students at SIU shall have the right to appeal for redress of grievance through established channels under the conditions stated below. Access to these channels is restricted to complaints by graduate students alleging that some member of the university community has caused the student to suffer some specific harm related to a matter within the authority of the dean of the Graduate School. Grievances which have been brought to a hearing under another campus grievance procedure shall not be brought to a hearing under this procedure.

With respect to students' complaints alleging capricious grading, the following guidelines shall apply: Instructors are expected to evaluate student work according to sound academic standards. Equal demands should be required of all students in a class, and grades should be assigned without departing substantially from announced procedures. It is the instructor's prerogative to assign grades in accordance with his/her academic/professional judgment, and the student assumes the burden of proof in the appeals process. Grounds for appeals include: (1) the application of non-academic criteria in the grading process, as listed in the University's non-discrimination and affirmative action statements: race, color, sex, national origin, religion, age, sexual orientation, marital status, or handicap; (2) the assignment of a course grade by criteria not directly reflective of performance relative to course requirements; (3) the assignment of a course grade by standards different from those which were applied by the instructor to other students in the course.

GRADUATE STUDENT ACADEMIC GRIEVANCE PROCEDURE

A graduate student seeking redress through grievance must first attempt to resolve the matter informally by contacting the party against whom redress is sought (respondent). If the dispute is not resolved at this stage, the student should contact the respondent's departmental chair or another appropriate mediator, such as the university ombudsman, who will attempt to resolve the dispute.

In the event that the dispute is not resolved informally, a graduate student may ask for and receive a hearing before a departmental academic grievance committee. [Such a grievance will be governed by the procedures established by the academic unit in which the complaint arose. In the event an academic unit has not established such procedures, the procedures outlined below shall govern the grievance.]

¹Cases involving academic dishonesty will be handled according to the Student Conduct Code. Separate grievance procedures exist for cases covered by the University Policy on Sexual Harassment, the Policy Accommodating Religious Observances of Students, the Policy on the Release of Student Information and Access to Student Records at Southern Illinois University, the Policy on Immunization of Enrolled Students, the Policy on the Determination of Residency Status, and the University's response to comply with Americans with Disabilities Act. These procedures are published in the Undergraduate Catalog. Graduate students employed as student workers are covered by a student worker grievance procedure, which is administered by the Financial Aid office.

Departmental Grievance Procedure

FILING A GRIEVANCE

A graduate student desiring a hearing before a grievance committee of an academic department must submit a written request to the chair of the department no later than 30 calendar days after the beginning of the semester following the incident in question, excluding summer term. A student may request an extension of the deadline in writing by petitioning the department chair. In the event that informal proceedings are continuing toward resolution, such a request shall normally be granted. The request for a hearing must state the following:

1. Name of the grievant.
2. Program in which the grievant is enrolled.
3. Name of the grievant's major adviser.
4. Name and title of the person(s) against whom the grievance is being filed.
5. Current address and phone number of the grievant.
6. Statement of the grievance including descriptions of the incident(s) involved, date(s) of occurrence, what remedy is being sought, as well as any supporting documents.

²Hereafter, "day" refers to calendar day, unless defined otherwise.

³Department Graduate Student Grievance Committee: A department graduate student grievance committee will be advisory to the department chair and will submit its findings to the department chair. The committee shall consist of three members. The department chair may designate an existing department committee to serve in such a capacity (subject to the qualifications listed herein), or may appoint an ad-hoc graduate student grievance committee. The members of the committee shall be appointed wherever possible from the department/unit in the college in which the grievance arose. Of those three members, two shall be appointed from the senior graduate faculty and one shall be appointed from the graduate student body upon consultation with the leadership of the department graduate student organization. A department graduate student grievance committee shall meet and elect its chair from among its graduate faculty membership. Any faculty member involved in the dispute shall not be appointed to the grievance committee.

DEPARTMENT ACTION ON GRIEVANCE

Upon receiving a written request for a hearing regarding an academic grievance, the department chair shall send the respondent a copy of the grievance, who will provide the chair with a written response within a reasonable time as stipulated by the chair. The chair shall then forward the grievance and response to the department graduate student grievance committee.

The department chair shall notify the parties of the identity of the individuals who have been selected to serve on the grievance committee. The participation of any committee member may be challenged for cause. If the department chair determines that the challenge is valid, she/he shall name a substitute.

The committee chair shall request of both parties copies of any documents and a list of witnesses they wish to introduce. These should be submitted without delay. The committee chair shall convene a hearing within 20 days of receipt of the substantiating documents. These documents shall be available to both parties at least five days prior to the hearing.

The hearing shall be conducted by the committee according to the hearing procedures which are outlined in the Appendix.

In the absence of compelling circumstance, the committee shall make its recommendation on the grievance to the department chair within 10 working days after the conclusion of the hearing.

The department chair shall decide to accept or reject the committee's recommendations and render a decision on the grievance promptly. The decision and the reasons for it shall be submitted to the parties, the committee members, and the collegiate dean at the same time.

The department chair shall advise the parties of their right to appeal to the dean of the Graduate School. Hearings of appeals will not be automatically granted. Dissatisfaction with the decision shall not be sufficient grounds for appeal. The appellant must demonstrate that the decision at the department level was in error.

Appeals of Department Decisions to the Graduate School

FILING AN APPEAL

If a graduate student wishes to appeal a decision of the department she/he must file a written appeal with the dean of the Graduate School within 30 calendar days of receipt of the department decision. The appeal must state the following:

1. Name of the appellant.
2. Program in which the appellant is enrolled.
3. Name of the appellant's major adviser.
4. Name and title of the person(s) against whom the original grievance was filed.
5. Current address and phone number of the appellant.
6. Copies of the original statement of grievance, the response by the person against whom it was filed, supporting documents, as well as a statement of what remedy is being sought.
7. Summary of grievance proceedings held at the department level and the decision(s) rendered at that time.
8. Statement of why the previous decision may be in error.

The dean will promptly forward the material to the coordinator of the Student Appeals Committee of the Graduate School (SAC). The SAC coordinator will solicit a reply to the appeal from the respondent. The coordinator will then promptly forward all materials to the committee members and will convene the committee at the earliest opportunity. The committee will decide by simple majority whether or not a hearing should be held. If a hearing is not granted, the coordinator shall forward all materials to the dean of the Graduate School and inform both parties of the reasons for the denial. If a hearing is granted the SAC coordinator shall request from the Graduate Council a list of graduate faculty members and from the Graduate and Professional Student Council a list of graduate students available to serve as hearing panel members. These persons may not be members of the same college as the parties to the grievance. The coordinator shall appoint a panel of three graduate faculty members and two graduate students and so notify the parties to the grievance. Panel members may be challenged for cause and, if the coordinator determines the challenge to be valid, she/he will

name substitute(s) from the lists. The panel selects its own chair.

⁴Student Appeals Committee of the Graduate School: The Vice-Chair of the Graduate Council shall be the Coordinator of the SAC who will select three members of the Graduate Council (two faculty members, one student) to form a SAC as needed.

Procedures of the Student Grievance Committee of the Graduate School

Upon formation of the hearing panel, the SAC coordinator shall forward all materials to the hearing panel chair. The chair shall convene a hearing within 30 days.

The hearing shall be conducted by the hearing panel according to the procedures listed in the Appendix, with the exception that new evidence and testimony may be introduced only at the discretion of the panel. The hearing at this level will be limited to the bases of the appeal itself. New evidence will not normally be permissible.

The committee shall make its recommendation on the appeal to the dean within 10 working days after the conclusion of the hearing. The dean of the Graduate School shall decide to accept or reject the committee's recommendations and render a decision on the grievance promptly. The decision and the reasons for it shall be submitted to the parties, the hearing panel members, and the department chair.

All records of the appeal and hearing shall be deposited with the Graduate School upon completion of the hearing panel's work.

Appendix A

HEARING PROCEDURES

1. The principal parties to the grievance shall have the right to be accompanied by an adviser of their choice. The advisers may speak on behalf of their clients only with the approval of the committee.
2. All hearings shall be open unless either of the parties requests that the hearings be closed. If the hearing is closed, only the parties, their adviser, and the committee shall be present during the taking of evidence. Witnesses for either party shall be present only while giving testimony if the hearing is closed.
3. All hearings shall be tape recorded. The tape recording will be deposited in the office of the department chair at the conclusion of the hearing.
4. Each party may call witnesses to present evidence. Each party shall have the right to examine any witness called by the opposing party. If a witness is unable to appear the committee may allow written statements. If the presence of a witness is required to ensure fairness to all parties, the hearing may be continued until such witness is physically able to attend the hearing.
5. The committee will decide all matters, procedural and substantive, by simple majority vote.
6. Each party may make an opening and a closing statement.
7. Decisions by the panel will be based on a preponderance of the evidence.

Graduate School Procedures for Charges of Academic Dishonesty Leading to Possible Rescission of Degree

INTRODUCTION

Charges against a former student relating to acts of academic dishonesty in the submission of graduate degree requirements shall be handled to the extent feasible under the SIU Student Conduct Code procedures applicable to charges relating to academic dishonesty. The dean of the Graduate School has the responsibility for the formal resolution of charges involving academic dishonesty in Graduate School programs. Since the Student Conduct Code procedures are not in all respects applicable to charges involving an individual no longer enrolled in the University, the following supplemental procedures will be followed for adjudicating such charges.

NOTIFICATION OF CHARGES

Charges against a former student involving allegations of academic dishonesty in the completion of graduate degree requirements shall be initiated by the dean of the Graduate School by letter to the individual, sent certified mail/return receipt requested, stating the specific charges, and the date, time, and place for the hearing, and enclosing a copy of the Student Conduct Code and these procedures. The charge letter shall be mailed no fewer than 20 business days in advance of the date of the hearing.

HEARING AGENT

Charges shall be heard by a five-member hearing committee, the members of which shall be appointed from those colleges/schools having graduate programs. Of the five members, three shall be appointed from the graduate faculty and two shall be appointed from the graduate student body. The dean will seek nominations for a committee hearing a case from the Graduate and Professional Student Council for the graduate student members, and from the Graduate Council for the graduate faculty members. The committee will be demographically representative of the University insofar as possible. The academic unit from which the charge arose will not have a member appointed to the hearing committee. Once a hearing committee is constituted it shall meet and elect its own chair from among its graduate faculty membership. The individual charged shall have the right to challenge membership of the hearing committee as provided in the Student Conduct Code.

HEARING PROCEDURES

Hearings shall be conducted in accordance with the formal disciplinary procedures set forth in the Student Conduct Code. In addition, the following procedures shall govern the conduct of the hearing.

1. The individual charged shall have the right to be accompanied by an adviser of his/her choice. An adviser will be permitted to advise the individual in the hearing, and to speak on behalf of the individual and cross-examine witnesses with the consent of the hearing committee.
2. The dean of the Graduate School and the individual charged shall provide to the hearing committee a list of witnesses to be called and copies of any documents which they seek to introduce into evidence at the hearing. The

committee chair will furnish copies of these to the other party. Such witness list and documents shall be provided to the hearing committee not less than 10 business days prior to the date scheduled for the hearing, and to the parties not less than 5 business days before the date of the scheduled hearing.

3. All hearings shall be closed unless the individual charged requests that it be open. If the hearing is closed, only the parties, their adviser, and the committee members shall be present during the taking of evidence. Witnesses for either party shall be present only while giving testimony.
4. All hearings shall be tape-recorded. The tape-recording will be submitted along with the entire case record and the committee's findings and recommendations to the dean of the Graduate School following conclusion of the hearing.
5. Each party may make an opening statement before the presentation of any evidence and a closing argument following the conclusion of all evidence.
6. The charges against the individual and witnesses testifying in support thereof shall be presented first. The individual charged shall have the right to respond to the charges and present witnesses and evidence in his/her own behalf.
7. Each party shall have the right to ask questions of any witness called by the other party. Members of the committee may also question witnesses.
8. Written statements in lieu of personal testimony may be used only with permission of the committee and only in the event a witness is physically unable to attend the hearing. The opposing party shall be given notice at least three days prior to the commencement of the hearing of the fact that an individual will not be physically present to give testimony and so that objection may be made to the use of written statements. If the committee determines that the actual presence of the witness is required to insure fairness to all parties, the hearing may be continued until such witness is physically able to attend the hearing.
9. The hearing committee will decide all matters, procedural and substantive, by simple majority vote.
10. In the absence of compelling circumstances, the committee shall make findings and recommendations on the charges to the dean of the Graduate School within 15 business days after the conclusion of the hearing. The dean of the Graduate School shall render a decision, absent compelling circumstances, within ten business days after receipt of the committee's findings and recommendations. The decision and the reasons therefore shall be submitted to the individual charged by certified mail, return receipt requested, and to the committee chair. If the dean determines that additional evidence is necessary to decide the matter(s), the dean may remand the matter to the committee for the taking of further evidence, and in doing so, may limit the issues on which additional evidence may be taken. When a matter is remanded to the committee, the committee shall follow the procedures set forth above.

SANCTIONS

Sanctions which may be imposed include the completion of any additional academic requirements deemed necessary for continued holding of the degree, or, if it is found that the degree was improperly awarded because of academic dishonesty on the part of the former student in the submission of degree requirements, a recommendation that the degree be rescinded. A recommendation that a degree be rescinded will be made to the chancellor through the vice chancellor for Academic Affairs and Provost, and will require final action by the Board of Trustees of Southern Illinois University.

APPEAL

If the individual is not satisfied with the decision of the dean, a written argument stating the reasons for such dissatisfaction may be submitted to the vice president for Academic Affairs and provost within ten business days after the date that delivery of the decision was tendered by the U.S. Postal Service to the individual. Such written argument shall be attached to the dean's decision and remain therewith throughout the remainder of the process.

Southern Illinois University Board of Trustees Policy on Sexual Harassment

(The following policy was approved by the SIU Board of Trustees on May 7, 2009.)

1. Sexual Harassment Policy Statement

Southern Illinois University is committed to a policy of providing equal employment and educational opportunities. In particular, Southern Illinois University is committed to maintaining a community in which students, faculty, and staff can work and learn together in an atmosphere free of all forms of discrimination, including sexual harassment. Sexual harassment violates the dignity of the individual and the integrity of the University as an institution of higher learning, and thus, sexual harassment in any form will not be tolerated at Southern Illinois University. This policy applies to all employees, students, contractors, and visitors of Southern Illinois University.

This policy prohibits sexual harassment, retaliation related to sexual harassment claims, knowingly reporting false sexual harassment complaints and knowingly providing false information during the investigation of a sexual harassment complaint. All University employees are responsible for taking reasonable and necessary action to prevent sexual harassment, and all members of the University community are expected to contribute to an environment free of sexual harassment, and are encouraged to report promptly (pursuant to campus procedures) any conduct that could be in violation of this policy. Each SIU campus shall adopt specific procedures for reporting, investigating and resolving harassment claims.

This policy shall not abridge any individual's speech and due process rights under the First and Fourteenth Amendments; nor shall it abridge principles or rights of academic freedom or the University's educational mission. Prohibited sexual harassment and discrimination are not expression protected as a matter of academic freedom.

2. Definition of Sexual Harassment

Sexual Harassment in Employment

means any unwelcome sexual advances, requests for sexual favors, or any conduct of a sexual nature, when:

- a. Submissions to or toleration of such conduct is made, either explicitly or implicitly, a term or condition of an individual's employment (this is a type of quid pro quo – meaning “this for that” – sexual harassment); or
- b. Submission to or rejection of such conduct by an individual is used as a basis (or threatened to be used as a basis) for employment decisions or assessments affecting such individual (this is a type of quid pro quo – meaning “this for that” – sexual harassment); or
- c. Such conduct has the purpose or effect of substantially interfere with an individual's work performance or creating an intimidating, hostile, or offensive working environment (this is a type of hostile environment sexual harassment).

Sexual Harassment in Higher Education

means any unwelcome sexual advances, requests for sexual favors, or any conduct of a sexual nature, when:

- a. Submissions to or toleration of such conduct is made, either explicitly or implicitly, a term or condition affecting the student's participation in or benefit from any of the academic educational, extra-curricular, athletic, or other programs of the University (this is a type of quid pro quo – meaning “this for that” – sexual harassment); or
- b. Such conduct has the purpose or effect of substantially interfering with a student's academic performance or creating an intimidating, hostile, or offensive academic environment (this is a type of hostile environment sexual harassment).

Hostile environment sexual harassment occurs when unwelcome conduct of a sexual nature is so severe, persistent, or pervasive that it affects an employee's work performance, limits a student's ability to participate in or benefit from a University program or activity, or creates an intimidating, threatening or abusive working or academic environment. Sexual harassment generally includes something beyond the mere expression or display of views, words, symbols, images, or thoughts that some persons find offensive.

Totality of the Circumstances:

In determining whether alleged conduct constitutes sexual harassment, the record as a whole and the totality of the circumstances will be considered. Circumstances may include the frequency of the conduct; its severity; whether it was physically threatening or humiliating, or a mere offensive utterance; and whether it unreasonably interfered with the alleged victim's work performance or ability to participate in or benefit from the University's programs. The objective severity of the conduct will be judged from the perspective of a reasonable person in the position of the alleged victim and not on the intent of the person engaging in the conduct.

Examples of behavior that may be considered sexual harassment include, but are not limited to:

- a. Physical sexual assault or coerced sexual intercourse;
- b. Unwelcome physical contact, such as touching of a person's body, hair or clothing, or hugging, patting or pinching;
- c. Direct or implied threats that submission to sexual advances will or could be a condition of employment, work status, promotion, performance evaluation, grades, letters of recommendation, or other work or educational benefits (quid pro quo);
- d. Severe or persistent unwelcome verbal, physical or other expressive conduct that is offensive or humiliating in a sexual way. Such conduct may include comments of a sexual nature and/or sexually explicit statements, questions, jokes, anecdotes, gestures, or facial expressions that would offend or humiliate a reasonable person in the circumstances of the individual experiencing this conduct. Conduct need not be in person but can be any form of communication including but not limited to written, telephone, or electronic communication such as electronic mail and/or comments sent via the internet.

- e. Exhibition or use of sexually explicit materials in the workplace or learning environment that have no relationship to the curriculum or research or the mission of the University and substantially interfere with an employee's work performance or a student's ability to benefit from University programs. Such materials may be in the form of music, documents, objects, photographs, film or electronically generated materials.
- f. Any unwanted, inappropriate behavior that is targeted to a person or person(s) because of their gender or sexual orientation, for example repeatedly telling women (or men) that they are not capable of doing a certain kind of work.
- g. Amorous or sexual relationships between a faculty member and a student under his or her academic supervision or between a supervisor and an employee under his or her supervision, where the direct power differential compromises the subordinate's free choice. (Even consenting relationships may lead to an actual or perceived conflict of interest or other unethical conduct. See policies on consenting relationships.)

Retaliation

is defined as any act of reprisal, including negative or otherwise unwarranted treatment, related to the reporting of, or participation in a complaint of sexual harassment. Retaliation may include, but is not limited to:

- a. Taking negative tangible employment actions against a person;
- b. Taking actions that substantially interfere with or have a chilling effect on the employee's or student's ability to participate fully in and benefit from the work or educational environment;
- c. Failing to provide assistance or instruction that would otherwise be provided;
- d. Failing to fairly and/or objectively evaluate an employee's or student's performance;
- e. Failing to record an appropriately earned grade for a student; or
- f. Otherwise sabotaging an employee's or student's performance or evaluation.

It is a violation of this policy to engage in any retaliatory acts against an employee or student who reports an alleged incident of sexual harassment, or any employee or student who testifies, assists, or participates in a proceeding, investigation, or hearing relating to an allegation or complaint of sexual harassment.

3. Duty to File in Good Faith/False Reports

Any person who reports alleged sexual harassment or provides information during the investigation of a complaint is presumed to have participated in the investigatory process in good faith. It is a violation of this policy for persons to knowingly make a false sexual harassment complaint or knowingly provide false information during the investigation of a complaint.

4. Implementing Procedures

This Sexual Harassment Policy is to be implemented throughout the University, and procedures consistent with this policy for such implementation are to be established on each campus. The President is authorized to delegate to each Chancellor, the authority to develop procedures for the implementation of this Sexual Harassment Policy.

Attribution

Sexual harassment policies are governed by state and federal laws and statutes. As such, policies at many institutions can look very similar to that proposed by SIU. This policy was developed in accordance with the Illinois Human Rights Act (775 ILCS 5/2 and 775 ILCS 5/5 and 775 ILCS 5/5a), the Equal Employment Opportunity Commission Regulations (29 C.F.R. § 1604.11); and guidance issued by the United States Department of Education Office of Civil Rights. Additionally, policies from several other universities were reviewed including: University of Massachusetts Amherst, University of Michigan, University of North Carolina at Chapel Hill, Michigan State University, University of North Carolina At Greensboro, University of Maine, Indiana University, Indiana University - Purdue University at Indianapolis, Purdue University, University of Southern Indiana - Evansville, New York University, University of Illinois, University of Massachusetts - Boston, City University of New York, Northwestern University, Illinois State University, University of Colorado System, Youngstown State University, Princeton University, Michigan State University, and University of Florida - Gainesville.

Where to Get Information Regarding SIU's Sexual Harassment Policy

COMPLAINT RESOLUTION OFFICER

Linda McCabe Smith, Associate Chancellor
for Institutional Diversity

AFFIRMATIVE ACTION OFFICE

Linda McCabe Smith, 453-1186, or Affirmative
Action Officer618-536-6618

INFORMATION ADVISORS

Center for International Education.....	Maggie Flynn	618-453-7644
College of Agricultural Sciences.....	Karen Midden	618-452-2469
College of Applied Sciences & Arts.....	Elaine Atwood	618-453-2052
College of Business.....	Jill Gebke	618-453-7487
College of Education & Human Services.....	Katrina James	618-453-6340
College of Engineering.....	Lizette Chevalier	618-453-4321
College of Liberal Arts.....	Rachel Whaley	618-453-2494
College of Mass Comm. & Media Arts.....	Deborah Tudor	618-453-3267
Dean of Students		
Graduate School.....	Ratna Sinha	618-453-4570
Human Resources.....	Jennifer Watson	618-453-6661
Intercollegiate Athletics.....	Kathy Jones	618-453-5279
Library Affairs.....	Kandace Riddle	618-453-1466
Plant & Service Operations.....	Teri Stobbs Ricci	618-453-6794
School of Law.....	Judi Ray	618-453-8135
School of Medicine Springfield.....	George Perich	217-545-5646
University College.....	Tabitha Stone	618-536-5551
University Housing.....	Kate Sartori	618-453-3318
Women, Gender & Sexuality Studies.....	Barbara Bickel	618-453-5141

WEB SITE

http://policies.siu.edu/personnel_policies/chapter4/ch4-all/sexual.html

In an emergency situation that involves possible criminal sexual misconduct or in the event of criminal sexual assault please notify Campus Police at 453-2381 or dial 911 (both lines are TTY/TDD accessible.) If it is not an emergency, please report to safe.siu.edu.

Academic Resources

Library Affairs

Morris Library is named after the late Delyte W. Morris, University President from 1948 to 1970. Students, faculty, and staff of the University benefit from unlimited access to millions of dollars of research materials carefully selected and maintained by professional library faculty and staff through <http://lib.siu.edu>. The catalog, I-Share@Morris Library (available via <http://www.lib.siu.edu>), is the gateway to identify and request items held in Morris Library, as well as from over 100 other academic libraries in Illinois. Items requested from other libraries arrive within a few days through I-Share or Interlibrary Loan. Online resources include academic journals, e-books (now over 235,000 in number), full-text databases, and freely-available resources. The building houses nearly three and a half million volumes, three and a half million microforms, and 53,500 currently-received periodicals and serials. The physical collections also include government documents, maps, films, DVDs, and sound recordings. Morris Library is a selective U.S. Federal Depository Library and an Illinois State Depository. With the exception of materials in the Special Collections Research Center, library materials are arranged on open shelves for convenient browsing.

Nearly 400 computers distributed throughout the building provide access to the catalog and to all of the online resources while patrons are in the Morris Library building. Throughout the building, patrons find wireless access, study tables with integrated power outlets, comfortable seating, and group study rooms of various sizes and configurations. Students may reserve group study rooms online. The basement, 4th and 5th floors are reserved for silent study. Other frequently-used services available in the building include copiers, scanners, printers, Debit Dawg machine, fax machine, vending machines, and free electronic device charging stations.

Morris Library has been transformed into a spectacular center of academic, social and aesthetic activity for the University and local community during the last decade. In addition to abundant natural light, a variety of seating arrangements cater to every patron's study preference. Visitors enjoy intellectual, historical, cultural, and artistic events in the 200-seat Guyon Auditorium, Hall of Presidents and Chancellors, and two Rotundas. Events are also scheduled in meeting rooms, classrooms, and computer labs/classrooms. Art and exhibits adorn many areas of the building with receptions and lectures announced frequently.

Delyte's Cafe serves Seattle's Best Coffee and other beverages as well as yogurt, soup, sandwiches, salads, baked goods, and snacks from early morning into the evening. Delyte's is located in the lobby on the north side of the building. During the academic year, the building is open to all, Sundays from 11 a.m. - Midnight, Mondays - Thursdays 7:30 a.m. - Midnight, Fridays 7:30 a.m. - 9 p.m. and Saturday 10 a.m. - 6 p.m.

Library services provided in Morris Library include:

- The Information Desk invites patrons to ask questions, obtain assistance with academic, professional, and personal research, and get technology help (Saluki Tech). The Information Desk and the "Ask a Librarian" service (<http://libguides.lib.siu.edu/askalibrarian>) are staffed by library

faculty and staff who are eager to help students, faculty, staff, and others in fulfilling their research needs. Consultations, instructional sessions, online tutorials, videos, and guides are provided free of charge on a continuous basis.

- Disability Support Services features software, hardware, and assistance for those who need adaptive technologies.
- Circulation Services checks out library materials, course reserves, interlibrary loan items, room keys, laptops, adaptors, and other devices.
- Instructional Materials Center (IMC) contains a collection of PreK-12 materials designed to provide students, teachers, and school administrators both on-campus and in southern Illinois with sample teaching materials that can be used in the classroom or in evaluating curricular materials.
- Geospatial Resources includes the Map Library and Geographic Information Services (GIS). The Map Library houses more than a quarter of a million maps and nearly 100,000 aerial photographs. GIS assists patrons in locating existing digital maps or in creating customized maps.

The Special Collections Research Center (SCRC) is located off the Hall of Presidents and Chancellors. SCRC houses unique materials such as rare books, manuscript collections, and the University archives. It contains significant research collections in American Philosophy, First Amendment Freedoms, American and British twentieth century literature and theatre, a Political Papers archive, and the history of southern Illinois.

In addition to comprehensive library services, the Morris Library building is home to Math Central (classrooms and lab), Learning Support Services (Tutoring Center, Testing Services), Center for Teaching Excellence, the University Honors Program, the Writing Center, the Speaker's Center, and Saluki Tech (walk-up technology support and personal device configuration).

Information Technology

The Department of Information Technology assists students, faculty, and staff in the achievement of instruction, research, service administrative goals and objectives of the University. SIU's campus area network provides network-based information resources as well as Internet2 connectivity to all main campus buildings. Campus wireless service and five Computer Learning Centers with computer classrooms and general access areas are available. SIU's network is connected through three independent Internet Service Provider (ICN).

Information Technology provides a wide range of technology services to include; campus telephone services; records management services; administrative information systems; student information systems; network infrastructure; electronic mail; network ID services; computer, telephone, e-mail, instant messaging and walk-in support via the campus helpdesk; ethernet access in the student residence halls; campus wireless access; student printing services in computer labs and libraries; site license software distribution; UNIX computational accounts and a high performance computer cluster.

Students have access to the student information resource

“SalukiNet” salukinet.siu.edu. SalukiNet provides access for students to their SIU personal records, including admissions, housing, financial aid, grades, transcripts, account information, student payroll and much more.

Computer services are available on-line to the University academic, research and administrative communities 24 hours per day, seven days a week.

Research and Service Centers

Advanced Coal and Energy Research Center

The Advanced Coal and Energy Research Center (ACERC) assists faculty, students and others in the campus research community in engaging in advanced coal and energy-related research and service opportunities. Established in 1974 as the Coal Research Center and expanding its focus in 2014 to include the broad array of energy research occurring across campus, ACERC is the hub for access to resources and information regarding advanced coal and energy research for SIU and the regional community. Research has been conducted ranging from mine reclamation, coal processing, and gasification to energy policy, biofuels and renewables. Ever at the forefront of efforts for safer, cleaner and more efficient energy, SIU researchers are making discoveries in areas such as carbon dioxide utilization, chemical looping combustion, microalgal fermentation and advanced materials for fuel cells. Faculty and students from such diverse fields as engineering and technology, science, business, education, law and agriculture have contributed to the University’s international reputation in advanced coal and energy research. In addition to the various graduate degree and research opportunities in colleges across campus related to energy topics, ACERC supports SIU’s Professional Science Masters in Advanced Energy and Fuels Management program, which affirms an impressive post-graduation employment percentage.

Since 1990 ACERC has managed the Illinois Energy Development Park (IEDP) at SIU’s Carverville Campus. Efforts at the IEDP have targeted technologies that promise near-term commercial application. The IEDP has housed numerous technology projects including federal, state, and privately funded projects exploring advanced mining and coal utilization technologies. It houses one of only two Longwall Dust Control Facilities in the nation, laboratories and equipment, administrative space as well as a high bay building for large demonstration pilot projects.

In addition, the Advanced Coal and Energy Research Center facilitates the activities of Clean Coal Review Board which assists in the development of commercial applications related to coal, fuels, and energy.

More information can be found by exploring www.acerc.siu.edu, emailing acerc@siu.edu or by calling (618) 536-5521.

Center for Alzheimer’s Disease and Related Disorders

The School of Medicine’s center in Springfield has research projects that cover a wide range of basic science and clinical studies relating to normal aging, memory impairment, Alzheimer’s disease, Parkinson disease, tremor and functional MRI. The Center also maintains a brain bank of human brain tissue. The web address is: <http://www.siumed.edu/alz>.

Center for Archaeological Investigations

The Center for Archaeological Investigations engages in research in the American Midwest and Southeast, and Mexico. Funding is provided by state and federal agencies, and private institutions. The Center also conducts archaeological research for firms and government agencies that are required to comply with environmental and antiquities laws. The Center supports an annual field school with the Department of Anthropology and provides thesis/dissertation data and research opportunities for students. It also curates large collections of archaeological materials, representing more than 60 years of research in the American Midwest and Southwest. The web address for the Center for Archaeological Investigations is <http://cai.siu.edu/>.

Center for Autism Spectrum Disorders

The Center for Autism Spectrum Disorder (CASD) is a service program within the Rehabilitation Institute and a partner in the Illinois Autism Program. The CASD provides interdisciplinary training for students enrolled in various programs at SIU, including Communication Disorders and Sciences, Behavior Analysis and Therapy, and Psychology. The CASD also collaborates with several area service providers, such as local special education districts, Early Intervention, and state agencies, in providing best practice treatment. Diagnostic and treatment planning assessments are conducted to determine the presence of ASD and functional objectives in therapy. Research on areas related to ASD, such as intervention methods, staff training, and early identification, is also a focus. The web address is <http://www/casd.siu.edu/>.

Center for Delta Studies

The Center for Delta Studies builds linkages among scholars in the SIU system, universities in the region encompassed by the Delta Regional Authority, and between researchers and the larger publics. Its mission is to promote groundbreaking research that will contribute innovative solutions to the endearing problems of poverty and associated human and ecological endemic to the Delta region. The web address for the Center for Delta Studies is www.deltastudies.siu.edu.

Center for Dewey Studies

The Center for Dewey Studies was established in 1961 as the “Dewey Project.” In the course of collecting and editing the works of John Dewey (1859–1952), the Center has amassed a wealth of source materials for the study of America’s quintessential philosopher-educator. By virtue of its publications and research, the Center has become the international focal point for research on Dewey’s life and work. The Center has been instrumental in establishing Dewey Centers in China, Japan, Germany, Italy, Poland, Hungary, Turkey, Argentina, Spain, and Brazil.

In 1990, the staff of the Center completed work on the monumental thirty-seven-volume edition of Dewey’s complete writings, *The Collected Works of John Dewey, 1882–1953*, published by the Southern Illinois University Press. Support for this project was provided by the National Endowment for the Humanities, an independent federal agency, as well as the John Dewey Foundation and individual donors. In 1996, the Center in cooperation with the IntelLex Corporation, published an electronic edition of *The Collected Works*.

In 2005, the Center, in cooperation with the InteLex Corporation, published the third volume of *The Correspondence of John Dewey, 1871-1952*. This electronic edition, funded by the National Endowment for the Humanities, the John Dewey Foundation, and individual donors, makes available more than 25,000 items of John Dewey's correspondence in an easily searchable database. The Center is now at work on an edition of Dewey's class lectures. The Center also compiles and edits the standard bibliography of secondary works about Dewey, *Works About Dewey*. Additional information about activities of the Center can be found at its website, <http://deweycenter.siu.edu/>.

Center for Ecology

The purpose of the Center for Ecology is to provide an umbrella for ecological research, teaching, and training at SIU. More than 50 faculty members and numerous students and staff from several departments in the Colleges of Agricultural Sciences, Engineering, Science, and Liberal Arts participate in this interdisciplinary program. Independent, cooperative, and collaborative research conducted by Center faculty takes advantage of the exceptional range of natural resources of the region across a variety of ecosystems in Illinois, throughout the United States, and around the world. The Center offers a variety of resources and opportunities for graduate and undergraduate students at SIU and beyond, including internships, a state of the art analytical laboratory, and the 1,400 acre Middle Mississippi River Wetland Field Station. Doctoral students pursuing ecological studies at SIU can earn a Specialization in Ecology, which appears on the transcript, through the Center. Learn more about the Center for Ecology at <http://www.ecology.siu.edu/>.

Center for Environmental Health and Safety

This center is responsible for the facilitating and monitoring of campus-wide compliance to policies, guidelines, and regulations of the University, state agencies, Environmental Protection Agency, Illinois Emergency Management Agency-Division of Nuclear Safety Agency, Occupational Safety and Health Administration, National Institutes of Health, and the Office of the Illinois State Fire Marshal with respect to campus health and safety. The center's web address is <http://www.cehs.siu.edu/>.

Illinois Soybean Center

Established in 1997, the Illinois Soybean Center focuses on developing information and technologies that enhance soybean production in Illinois and the North Central region, increase soybean utilization by the global community, contribute to the base of scientific knowledge, and educate human capital in the various attributes and applications of soybean. SIU faculty members in the College of Agricultural Sciences collaborate with those in the College of Science and the School of Medicine, along with university colleagues throughout the nation, to implement interdisciplinary research, education, and outreach programs on soybeans. The Center addresses issues related to all aspects of soybean production, utilization and policy, including breeding and genetics, biotechnology, crop protection, human nutrition and food, animal nutrition, marketing, and consumer acceptance. For more information see the website at <http://coas.siu.edu/research/illinois-soybean-center/index.html>.

Center for Rural Health and Social Service Development

The Center for Rural Health and Social Service Development enables faculty, staff, and students to work as partners with health and social service agencies to strengthen rural health infrastructure and to promote opportunities for health enhancement in rural communities of the region, the State, and the Nation. The center develops grants and projects, conducts cooperative research efforts, needs assessments, demonstration projects, and program evaluations; designs and implements training programs; tests new models of health care delivery; and develops policy recommendations to improve the health of rural populations. It has received grants from many public and private agencies concerned with health and social service issues, including the National Institutes of Health, Department of Health and Human Services, and the Centers for Disease Control and Prevention. Current priorities include rural health, transportation, childhood obesity, health and social service workforce, and health care access. For more information, visit the center's website: <http://crhssd.siu.edu/>.

The Center for Workforce Development

The Center for Workforce Development was established to create a research, education and training group that provides students and faculty with the opportunity to collaborate on research and development, education and training, and information and product dissemination. The objectives of the Center emphasize:

1. Research and Development—addressing the broad array of issues affecting the nature of the workforce and workplace settings.
2. Education and Training—addressing development and delivery of customized workforce education and training programs/courses in collaboration with agencies and organizations in the public and private sectors.
3. Information and Product Dissemination—addressing the need for dissemination of curriculum and instructional resources useful for promoting work-related education and training.

The Center for Workforce Development will serve as a broker in the exchange and sharing of information and higher education resources associated with the nature of the workplace and workforce. Further, the Center will act as a catalyst in bringing together leaders from business, research, education and government to interact and work together to formulate public policy associated with workforce development. For more information, visit the center's website: <http://ehs.siu.edu/WED/research/index.php>.

Center for Fisheries, Aquaculture, and Aquatic Sciences

Graduate research in fisheries, aquaculture, and aquatic ecology is conducted through the Center for Fisheries, Aquaculture, and Aquatic Sciences. Graduate study in fisheries, culminating in the Master of Science or Doctor of Philosophy degree, is offered in the Department of Zoology. In addition to a wide variety of support courses, ten fisheries courses are taught. Research activities include studies in fish management, fish genetics, aquatic toxicology, and aquaculture. Emphases include warm-water, coolwater, and coldwater fishes native to Illinois. There

are also opportunities to work with exotic species of fishes and shellfishes, both freshwater and marine, particularly through the international fisheries program. Some of the areas of research stressed are trophic ecology, water quality, large river ecology, pond culture, tank culture, polyculture, culture system development, nutrition, fish physiology, fish genetics, utilization of nursery areas, ecology of larval fishes, age and growth studies, introduction of hybrid fish species, utilization of power plant cooling lakes, population dynamics, and aquatic toxicology. Facilities in the Center for Fisheries, Aquaculture, and Aquatic Sciences include offices, well equipped laboratories, a computing faculty, aquarium rooms, culture ponds, a greenhouse for hydroponic and recirculating water system studies and an 8,300 square-foot wet-laboratory building and a 90-pond research/demonstration facility. The web address for the Center for Fisheries, Aquaculture, and Aquatic Sciences is <http://fisheries.siu.edu/>. Phone number: 618-536-7761.

Global Media Research Center

The Global Media Research Center serves as an intellectual hub for research on international, national and local media involving the College of Mass Communication and Media Arts and University faculty and in partnership with colleagues and institutions around the world. Center-sponsored research produces a body of knowledge that expands and extends the critical dialogue surrounding issues of importance in global media studies.

The phrase "global media" designates not only the long-established profession of foreign news reporting, and international sales of television programs and recorded music. It also denotes the global advertising and public relations industries, world cinema, business telecommunications, and other worldwide applications of the internet, including those of arts, environmentalist, religious and other civic groups. Research in this field may address global media activities, engage in comparative media studies, investigate media responsibility and ethics, or explore the interface between media arts and research.

The Center builds upon SIU's long tradition of international academic exchange and takes it a step further by conducting a strong and innovative research program directed to the dynamic, complex field of global media communication. The Center organizes seminar programs with outside speakers as well as campus presentations by faculty and graduate students, which help create a steady momentum and alertness to new and unfolding issues. The Center also hosts visiting scholars and artists, arranges exchange programs for faculty and students, and engages in grant-sponsored research initiatives. For more information visit the Center's website <http://mcma.siu.edu/research-creative/gmrc/index.html>

The Materials Technology Center

The Materials Technology Center was established in 1983 as a result of a high-technology thrust by the state of Illinois. Charged with stimulating materials-related research on the campus of SIU, the center accomplishes this mission through initiating interdisciplinary research in the Colleges of Engineering and Science, disseminating results to researchers in academia, industry, and national laboratories, and organizing Materials seminars and discussion groups. The center encourages research in new areas by administering a competitive grant program that funds start-up projects for faculty entering new areas of materi-

als research and provides technical, administrative and financial support to start-up and established research programs.

A historical strength of the center has been research in the area of carbon-carbon composites, but the center has expanded its leadership and expertise in carbon science to include studies in areas such as carbon nanotubes and development of carbon-material precursors. New areas of emphasis include Materials Design by Iterative Computation, Synthesis and Characterization, Sensors and Biosensors, and Energy Storage. Other research programs included catalysis, magnetic materials, materials for alternative and traditional energy, polymers, chemical vapor deposition and infiltration, and plasma induced deposition techniques. Under the guidance of established experts, students associated with MTC receive hands-on training and valuable experience. The total program of the center offers an opportunity for students at all levels of experience to train in the fields of Materials Science and Engineering. The web address for the Materials Technology Center is <http://mtc.siu.edu/>.

Meyers Institute for Interdisciplinary Research in Organic and Medicinal Chemistry

The Meyers Institute, founded in 2000 through an endowment provided by Dr. Cal Y. Meyers, Distinguished Professor Emeritus, advances knowledge in fundamental and applied organic and medicinal chemistry. Institute personnel include members of the College of Science, College of Agricultural Sciences, and School of Medicine, among others. In conjunction mainly with the Department of Chemistry, undergraduate and graduate students and postdoctoral fellows are afforded stipends to participate in advanced research projects. As part of its activities, the Institute hosts bi-annual symposia. The Institute's web address is <http://www.chem.siu.edu/research/meyers-institute/index.php>.

Center for Integrated Research in Cognitive & Neural Sciences (Neuroscience Research Center)

The mission of the Center for Integrated Research in Cognitive and Neural and Sciences (NRC) is to advance and disseminate knowledge in areas of Neuroscience and Cognitive Behavior. Our faculty affiliates are located on both the Carbondale and Springfield campuses. This diverse group conducts a wide variety of nationally recognized research activities on topics ranging from basic neural connectivity, to ion channel physiology, to studies of human behavior. A goal of the Center is to encourage the development of interdisciplinary research collaborations. Research opportunities for students are available at both graduate and undergraduate levels. For more information, visit the Center's website: nrc.siu.edu.

The Paul Simon Public Policy Institute

The Paul Simon Public Policy Institute (also called the Paul Simon Institute) is a resource for SIU students, the campus community, the region and the State of Illinois. The Institute's mission focuses on fostering ethical conduct in government, opportunity and fair treatment for people in America and throughout the world, and promoting responsible citizenship for all Americans--but particularly for young Americans.

The Institute executes its mission by: conducting nationally known public opinion polls (The Simon Institute Poll™ and The Southern Illinois Poll™) to inform decision makers and citizens; publishing analysis of public policy issues in its occa-

sional papers (The Simon Review); providing and supervising paid internships, graduate assistantships and fellowships for undergraduate and graduate students in Carbondale, Springfield and elsewhere; hosting noted leaders in public policy, politics, journalism and other fields to campus for speeches, conferences; and hosting leadership and civic education opportunities for high school students.

The Institute's popular "Pizza and Politics" programs are geared to both undergraduate and graduate students of all majors to interact with Institute guests. Other Institute undergraduate opportunities include the Vince Demuzio Internship program where juniors and seniors learn about public service during paid internships in local governmental offices. Undergraduate students can learn about public service while working paid internships in Springfield state government offices through the Gene Callahan Internship, the Alexander Lane Internship, and the Latino Heritage Legislative Internship. Undergraduate and graduate student studying Social Work can participate in the Social Work Internship program for course credit. Law students can receive public service externship course credit in the Law, Policy and Politics Externship. Other opportunities for graduate students include working at the Institute as a Celia M. Howard Fellow, submitting research questions in the semi-annual public opinion polls, and publishing in The Simon Review. The Institute has also sponsored learning opportunities for students in Washington D.C. and Pittsburgh, PA.

Students and parents can learn more at our website, www.paulsimoninstitute.org, and are encouraged to contact us at 618-453-4009 with questions, or stop by the Institute on campus at 1231 Lincoln Drive (the Forestry Building). You can also like us on Facebook at <https://www.facebook.com/paulsimoninstitute> or follow us on Twitter at www.twitter.com/psimoninstitute.

Paul Simon established the Public Policy Institute in 1997 upon his retirement from more than 40 years in elected office. Simon was a state Representative, state Senator and Illinois Lieutenant Governor before being elected to five terms in the U.S. House of Representatives beginning in 1974 and then serving two terms as U.S. Senator. Additionally, he was a candidate for the Democratic nomination for President of the United States in 1988 and a political mentor to many, including President Barack Obama. He remains one of Illinois' most revered political leaders and enjoyed broad bipartisan support from voters throughout his career.

After Senator Simon's passing in 2003, Mike Lawrence, who had been press secretary and senior adviser to Illinois Governor Jim Edgar in the 1990s and who served as the Institute's associate director since its inception, was named director. He retired in 2008. David Yepsen, a political columnist at the Des Moines Register for more than 30 years, was named director in 2009. Yepsen covered the Iowa caucuses dating back to the 1976 presidential race and has been a frequent guest on national news shows. Like his predecessors, Yepsen teaches courses in journalism.

Fermentation Science Institute

Established in 2014, the Fermentation Science Institute is a campus resource that provides an umbrella for the support and development of programs (educational, research and outreach)

and resources involving various aspects of fermentation processes. Topics include the production and analysis of alcoholic beverages and fermented foods, as well as the fermentation related production of energy, pharmaceuticals and biomaterials. As an interdisciplinary initiative involving various departments from multiple colleges, the Institute strives to catalyze and foster the development of new educational programs for the campus, collaborative research projects, and outreach programs providing advanced educational and training opportunities. The Institute is housed in newly renovated facilities in the McLafferty Annex that provide state of the art teaching and research facilities for fermentation science. The Institute also operates a fee for service laboratory providing analysis for the wine, beer and distilled spirits industries in the region. The Fermentation Science Institute's website address is <http://fermentation.siu.edu/>.

Safety Center

The Safety Center was established in 1960 and is affiliated with the Department of Health Education and Recreation. The Center's research activities, carried out by faculty, staff, and graduate students, focus on injury control and prevention as well as traffic safety. The Center also offers training programs in motorcycle rider safety, emergency/evasive driving/protective services, and child and occupant safety protection. It provides consulting services to businesses, agencies; and the general public. The Center hosts meetings, courses, seminars, and conferences on a wide range of injury prevention and health promotion topics. The Center's programming and research activity can be viewed at the Department's Website: <http://ehs.siu.edu/her/safety.php>.

STEM Education Research Center

With the approval of the Illinois Board of Higher Education, SIU and the College of Science have created a Research Center of Science, Technology, Engineering, and Mathematics (STEM) Education. The need for such a Center flows from critical issues that have emerged or are emerging in STEM education at the national, state, and local level.

At the national level, there is a clarion call for an increase in college graduates in STEM programs to address the critical need in the very industries that will be at the center of the continuing transformation of the world economy. National reports indicate the danger of the U.S. economy losing ground internationally unless our educational system becomes more effective at producing students interested in and capable of the rigors of the educational programs in the STEM disciplines. In addition, once these students enter university-level STEM programs, they must be greeted with effective state-of-the-art STEM content and pedagogy.

At the state and local level, one of the key components of an increase in the effectiveness of STEM education is the implementation of the Common Core State Standards (<http://www.corestandards.org/>) and the Next Generation Science Standards (NGSS; <http://www.nextgenscience.org/>) at the state level. While adopting these national standards is voluntary at the state level, Illinois has agreed to implement the Common Core and is an active lead state partner in the NGSS efforts. The implications of these decisions are just beginning to emerge and

will completely transform the content and pedagogy employed in K-12 classrooms across the state. In addition, new high-stakes assessments (PARCC) have been prepared that have replaced the Prairie State Exam at the high school level. As the state research University in the Southern Illinois region, SIU has an obligation to provide as much support as possible during this important transition period to our local school districts.

The structure and programs of the STEM Education Research Center will correspond to the primary areas of interest: K-12 STEM education, undergraduate STEM education, and graduate STEM education. As indicated above, K-12 STEM education is in a period of rapid transformation. One area of emphasis of the Center will be coordination of the existing programs already implemented at SIU, many of which reside in the College of Science.

STEM education at the undergraduate level is under increasing scrutiny. From finding ways to improve success rates in lower-level undergraduate STEM classes to identifying new and innovative ways to deliver undergraduate STEM content in our courses, our programs are undergoing rapid change. SIU must continue to ensure that the content and structure of undergraduate STEM courses provide the optimal preparation either for graduate school or for our students' chosen professions. In support of our undergraduates, the Center will be the natural leader in developing internship opportunities. One important collection of current programs that will be natural candidates for continued research will be the research experience for undergraduates (REU) programs that exist in the STEM disciplines.

Graduate STEM education must also stay current with the massive technological changes that are affecting our entire educational system. While the advisor-student mentorship which is at the heart of graduate education will almost certainly be preserved, the optimal uses of technology should be explored, and this will also be included under the umbrella of research programs at the STEM Education Research Center.

Cooperative Wildlife Research Laboratory

Since its founding in 1950, the Laboratory has achieved a distinguished record training graduate students in basic and applied principles of vertebrate ecology and wildlife biology. It is a comprehensive program that is recognized among the premier wildlife research units in the nation. Independent, cooperative, and collaborative research supported by industry, foundations, and state and federal agencies lead to better understanding and management of natural resources. Areas of acknowledged laboratory expertise include the biology and ecology of a variety of terrestrial wildlife species; land-use impact on wildlife resources; wildlife and environmental toxicology; waterfowl/wetland ecology; thermal ecology; and the epizootiology of zoonotic and other diseases in wildlife. The laboratory has pioneered in the reclamation and enhancement of mined lands for the benefit of various resources; and current efforts provide unique research and training opportunities. More than 30 projects directed by laboratory staff currently afford broad and varied research opportunities to graduate fellows and research assistants, as well as undergraduate students. These activities exceed \$1,000,000 each year in contracts and grants, resulting in significant contribution to academic needs of students and staff and requests

for service by state, federal, and private agencies. The web address for the Cooperative Wildlife Research Laboratory is <http://wildlife.siu.edu/>.

Research Support Facilities

The services of several centralized research support facilities are available to faculty, staff, and students at minimal cost. IMAGE (Integrated Microscopy and Graphics Expertise) provides training, technical service, and research in electron, atomic-force, and light microscopy (www.image.siu.edu). It also offers technical assistance to those in need of scientific photography or computer-graphics illustration as part of their research. The Mass Spectrometry Facility (housed within the Chemistry Department but available to researchers across campus) has a variety of instruments and offers qualitative and quantitative analysis services (www.mass-spec.siu.edu). The Laboratory Animal Program, a fully accredited facility, is directed by a veterinarian with specialty training in laboratory animal medicine to ensure proper and humane care of research animals (www.iacuc.siu.edu). The Central Research Shop designs and constructs laboratory equipment for special research requirements (<http://ospa.siu.edu/resources/central-research-shop.html>)

Office of Sponsored Projects Administration

The Office of Sponsored Projects Administration (OSPA) offers a number of services for faculty, staff, and students who wish to submit grant applications to funding agencies. Graduate students seeking funding for their research projects (dissertation support, research fellowships, travel grants, etc.) should start with OSPA's website <http://ospa.siu.edu/>, which offers access to searchable grants database (Grant Forward), links to funding agencies, and much other grant-related material. OSPA offers grant-writing workshops and can provide advice to graduate students seeking grants to support their scholarly activities. For this and other information specific to graduate students, visit <http://ospa.siu.edu/student-research/index.html>.

Many of the necessary forms and data required to complete grant proposals are easily available on the website. OSPA staff is available for assistance in proposal preparation. OSPA also works with faculty and student researchers in negotiating grant/contract award agreements, processing awards, and handling invention disclosures.

One of OSPA's responsibilities is to ensure that research conducted at SIU complies with all applicable federal and funding-agency regulations. Funded or unfunded research that will involve any of the following must have institutional approval before the research project begins: human subjects (including administering questionnaires, conducting interviews, or accessing confidential databases), research animals, radiological materials, hazardous biological materials, recombinant DNA, or hazardous waste. Students should contact OSPA (453-4533) or their graduate advisor for guidance. (See related information in section on Student Responsibility elsewhere in this chapter.)

Accreditations

The Graduate School, as a part of SIU, is fully accredited by the Higher Learning Commission of the North Central Association of Colleges and Schools. Web address: <http://www.ncahlc.org/>.

Other accreditations and affiliations include:

AABI Aviation Accreditation Board International
3410 Skyway Drive
Auburn, AL 36830
Telephone: (334) 844-2431
www.aabi.aero/programs.html

AACSB International—The Association to Advance
Collegiate Schools of Business
777 S. Harbour Island Blvd., Suite 750
Tampa, FL 33602-5730
Telephone: (813) 769-6512
www.aacsb.edu/

Accreditation Association for Ambulatory Health Care, Inc.
5250 Old Orchard Road, Suite 200
Skokie, IL 60077
Telephone: (847) 853-6060
www.aaahc.org

ABET, Inc.
415 N. Charles Street
Baltimore, MD 21202-4012
Telephone: (410) 347-7700
www.abet.org/

Accreditation Commission for Programs in Hospitality
Administration (ACPHA)
211 Tred Avon Street
P.O. Box 400
Oxford, MD 21654
Telephone: (410) 226-5527
www.acpha-cahm.org/

Accreditation Council for Education in
Nutrition and Dietetics (ACEND)
120 South Riverside Plaza, Suite 2000
Chicago, IL 60605-6995
Telephone: (312) 899-0040 ext. 5400
www.eatright.org/acend/

Accreditation Review Commission on Education for the
Physician Assistant (ARC-PA)
12000 Findley Road, Suite 150
Johns Creek, GA 30097
Telephone: (770) 476-1224
www.arc-pa.org/

Accrediting Council on Education in Journalism and
Mass Communications
School of Journalism
University of Kansas
1435 Jayhawk Blvd./ Stauffer-Flint Hall
Lawrence, KS 66045
Telephone: (785) 864-3973
www2.ku.edu/~acejmc/

American Association of Museums (AAM)
1575 Eye Street, Suite 400
Washington, DC 20005
Telephone: (202) 289-9116
www.aam-us.org/

American Bar Association, Section of Legal Ed and
Admissions to the Bar, Office of the Consultant on Legal Ed
321 North Clark Street, 21st Floor
Chicago, IL 60654
Telephone: (312) 988-6738
www.americanbar.org

American Bar Association Standing Committee on Paralegals
321 N. Clark Street
Chicago, IL 60654
Telephone: (312) 988-5617
www.americanbar.org/groups/paralegals.html

American Board of Funeral Service Education
3414 Ashland Avenue, Suite G
St. Joseph, MO 64506
Telephone: (816) 233-3747
www.abfse.org/

American Camp Association, Illinois Section
5 S. Wabash Street, Suite 1406
Chicago, IL 60603
Telephone: (312) 332-0833
www.acail.org/

American Chemistry Society
1155 16th Street
Washington, DC 20036
Telephone: (202) 872-4600
www.acs.org

American Psychological Association
Committee on Accreditation
Office of Program Consultation and Accreditation
750 First Street, N.E.
Washington, D.C. 20002-4242
Telephone: (202) 336-5979
www.apa.org/ed/accreditation/

Association of American Law Schools (AALS)
1614 20th Street
Washington, DC 20036-2717
Telephone: (202) 296-8851
www.aals.org/

Association for Assessment and Accreditation of Laboratory
Animal Care International (AAALAC)
5283 Corporate Dr., Suite 203
Frederick, MD 21703
Telephone: (301) 696-9626
www.aaalac.org/

Association for Behavior Analysis International (ABAI)
550 W. Centre Avenue
Portage, MI 49024
Telephone: (269) 492-9310
www.abainternational.org/

The Association of Technology Management and Applied Engineering (ATMAE)
1390 Eisenhower Place
Ann Arbor, MI 48108
Telephone: (734) 677-0720
www.atmae.org

Clinical Lab Improvement Amendment (CLIA) Illinois
Department of Public Health-Health Care Facilities and Programs
233 N. Michigan Avenue, Suite 600
Chicago, IL 60601
Telephone: (312) 886-6432
www.cms.hhs.gov/clia/

Commission on Office Laboratory Accreditation (COLA)
Reference ID #5438 #0455
9881 Broken Land Parkway, Suite 200
Columbia, MD 21046
Telephone: (800) 981-9883
www.cola.org

Commission on Accreditation of Allied Health Education Programs (CAAHEP)
1361 Park Street
Clearwater, FL 33756
Telephone: (727) 210-2350
www.caahep.org/

Commission on Accreditation in Physical Therapy Education (CAPTE)
1111 N. Fairfax Street
Alexandria, VA 22314-1488
Telephone: (703) 684-2782
www.apta.org

Commission on Accreditation of Rehabilitation Facilities (CARF)
6951 East Southpoint Road
Tucson, AZ 85756
Telephone: (520) 325-1044 or (888) 281-6531
www.carf.org/

Commission on Dental Accreditation of the American Dental Association
211 E. Chicago Avenue, Suite 1900
Chicago, IL 60611-2678
Telephone: (312) 440-4653
www.ada.org/

Commission on English Language Program Accreditation (CEA)
801 North Fairfax Street Suite 402A
Alexandria, VA 22314
Telephone: (703) 519-2070
<http://www.cea-accredit.org/>

Council for Accreditation of Counseling and Related Educational Programs (CACREP)
1001 N. Fairfax, Suite 510
Alexandria, VA 22314
Telephone: (703) 535-5990
www.cacrep.org/

Council for the Accreditation of Educator Preparation (CAEP)
2010 Massachusetts Avenue, Suite 500
Washington, DC 20036-1023
Telephone: (202) 223-0077
www.ncate.org/

Council for Interior Design Accreditation (CIDA)
206 Grandville Avenue, Suite 350
Grand Rapids, MI 49503-4014
Telephone: (616) 458-0400
www.accredit-id.org

Council on Academic Accreditation in Audiology and Speech-Language Pathology (CAA) of the American Speech-Language-Hearing Association (ASHA)
2200 Research Boulevard
Rockville, MD 20850-3289
Telephone: (301) 296-5781
www.asha.org

Council on Education for Public Health (CEHP)
1010 Wayne Avenue, Suite 220
Silver Springs, MD 20910
Telephone: (202) 789-1050
www.ceph.org/

Council on Rehabilitation Education (CORE)
1699 E. Woodfield Road, Suite 300
Schaumburg, IL 60173
Telephone: (847) 944-1345
www.core-rehab.org/

Council on Social Work Education
1701 Duke Street, Suite 200
Alexandria, VA 22314
Telephone: (703) 683-8080
www.cswe.org/

Federal Aviation Administration
Flight Standards District Office
1250 North Airport Drive, Suite 1
Springfield, IL 62707-8417
Telephone: (217) 744-1910
www.faa.gov/fsdo/spi

(The) Higher Learning Commission of North Central Association of Colleges and Schools
230 S. Lasalle Street, Suite 7-500
Chicago, IL 60604-1411
Telephone: (312) 263-0456 or (800) 621-7440
www.ncahlc.org

Illinois Certification Board d/b/a
Alcohol and Other Drug Abuse Professional Certification Association, Inc. (IAODAPCA)
401 E. Sangamon Avenue
Springfield, IL 62702
Telephone: (217) 698-8110
www.iaodapca.org/

International Association of Counseling Services
101 S. Whiting Street, Suite 211
Alexandria, VA 22304
Telephone: (703) 823-9840
www.iacsinc.org/

International Fire Service Accreditation Congress
Oklahoma State University
1812 Tyler Avenue
Stillwater, OK 74078-8075
Telephone: (405) 744-8303
<http://www.ifsac.org/>

Joint Review Committee on Education in Radiologic
Technology (JRCERT)
20 N. Wacker Drive, Suite 2850
Chicago, IL 60606-3182
Telephone: (312) 704-5300
<http://www.jrcert.org>

Liaison Committee on Medical Education (LCME)
American Medical Association (AMA) LCME Secretariat
330 N. Wabash Avenue, Suite 39300
Chicago, IL 60654
Telephone: (312) 464-4933
www.lcme.org/

National Architectural Accrediting Board, Inc. (NAAB)
1101 Connecticut Avenue NW, Suite 410
Washington, DC 20006
Telephone: (202) 783-2007
www.naab.org

National Association for the Education of Young Children
(NAEYC)
1313 L Street, NW, Suite 500
Washington, DC 20005
Telephone: (800) 424-2460 ext. 11318
www.naeyc.org/

National Association of Schools of Art and Design (NASAD)
11250 Roger Bacon Drive, Suite 21
Reston, VA 20190
Telephone: (703) 437-0700 ext. 12
www.arts-accredit.org/

National Association of Schools of Music
11250 Roger Bacon Drive, Suite 21
Reston, VA 20190
Telephone: (703) 437-0700 ext. 10
www.arts-accredit.org/

National Association of Schools of Public Affairs and
Administration
1029 Vermont Avenue NW, Suite 1100
Washington, DC 20005
Telephone: (202) 628-8965 ext. 103
www.naspaa.org/

National Association of Schools of Theatre (NAST)
11250 Roger Bacon Drive, Suite 21
Reston, VA 20190
Telephone: (703) 437-0700 ext. 10
www.arts-accredit.org/

National Automotive Technicians Education Foundation
101 Blue Seal Drive, SE, Suite 101
Leesburg, VA 20175
Telephone: (703) 669-6650
www.natef.org/

Society of American Foresters (SAF)
5400 Grosvenor Lane
Bethesda, MD 20814-2198
Telephone: (301) 897-8720 ext. 240
www.safnet.org/

Associations

CONSORTIUM FOR ADVANCED RADIATION SOURCES

The University is a member of the Consortium for Advanced Radiation Sources (CARS), a research consortium composed of Northern Illinois University, the University of Illinois at Chicago, the University of Chicago, Southern Illinois University Carbondale, and the Australian Nuclear Science and Technology Organization. Membership with CARS provides access to the facilities being developed at the Advanced Photon Source sited in Illinois and facilities at other federal laboratories.

COUNCIL OF GRADUATE SCHOOLS OF THE UNITED STATES AND CANADA

The University is a regular member of the Council of Graduate Schools (CGS) of the United States and Canada. CGS was established to provide graduate schools with both a comprehensive and widely representative organization through which they can counsel and act together. Web address: www.cgsnet.org.

COUNCIL ON RESEARCH POLICY AND GRADUATE EDUCATION (CRPGE) IN THE ASSOCIATION OF PUBLIC AND LAND-GRANT UNIVERSITIES (APLU)

The Graduate School is an active member of this major research and graduate educational council of the largest association of public research universities in the United States. Web address: www.aplu.org.

OAK RIDGE ASSOCIATED UNIVERSITIES

Since 1980, students and faculty of Southern Illinois University Carbondale have benefited from its membership in Oak Ridge Associated Universities (ORAU). ORAU is a consortium of 98 colleges and universities and a contractor for the U.S. Department of Energy (DOE) located in Oak Ridge, Tennessee. ORAU works with its member institutions to help their students and faculty gain access to federal research facilities throughout the country; to keep its members informed about opportunities for fellowship, scholarship, and research appointments; and to organize research alliances among its members.

Through the Oak Ridge Institute for Science and Education (ORISE), the DOE facility that ORAU operates, undergraduates, graduates, postgraduates, as well as faculty enjoy access to a multitude of opportunities for study and research. Students can participate in programs covering a wide variety of disciplines including business, earth sciences, epidemiology, engineering, physics, geological sciences, pharmacology, ocean sciences, biomedical sciences, nuclear chemistry, and mathematics. Appointment and program length range from one month to four years. Many of these programs are especially designed to increase the numbers of underrepresented minority students pursuing degrees in science- and engineering-related disciplines. A comprehensive listing of these programs and other opportunities, their disciplines, and details on locations and benefits can be found in the ORISE Catalog of Education and Training Programs, which is available at <http://see.ornl.gov>, or by calling either of the contacts below.

ORAU's Office of Partnership Development seeks opportunities for partnerships and alliances among ORAU's members, private industry, and major federal facilities. Activities include

faculty development programs, such as the Ralph E. Powe Junior Faculty Enhancement Awards, the Visiting Industrial Scholars Program, consortium research funding initiatives, faculty research, and support programs as well as services to chief research officers.

For more information about ORAU and its programs, contact James E. Garvey, Interim Vice Chancellor for Research, ORAU Councilor for Southern Illinois University Carbondale, at 618-453-4551; Monnie E. Champion, ORAU Corporate Secretary, at 865-576-3306; or visit the ORAU Home Page at <http://www.ornl.gov>.

THE SCIENCE COALITION

The Science Coalition is a nonprofit, nonpartisan organization of more than 50 of the nation's leading public and private research universities. It is dedicated to sustaining the federal government's investment in basic scientific research as a means to stimulate the economy, spur innovation and drive America's global competitiveness. Web address: www.sciencecoalition.org.

Facilities and Services

University Career Services

Career Services offers a wide variety of services to graduate students and alumni. From helping students research careers in their field of study to helping them connect with potential employers, Career Services is here to assist graduate students with their career and professional development needs. Services included: career research, resume critiques, curriculum vitae critiques, cover letter critiques, research and teaching statement reviews, mock interviews, salary negotiation, career fairs, on-campus interviews. Check out the services and resources online at careerservices.siu.edu or visit us in the Student Services Building, Suite 179. Appointments can be scheduled by calling University Career Services at (618) 453-2391.

University Housing

Many SIU Carbondale graduate students live on campus. Our on-campus apartments and residence halls offer professional, live-in staff; convenient locations; 24-hour emergency maintenance; air-conditioning and laundry facilities. Amenities vary.

Apartments

Evergreen Terrace Apartments offers two- and three-bedroom unfurnished apartments. A computer lab is located on site. Programs and activities for adults and children are available.

ELIGIBILITY: SIU Carbondale students with up to four children, married students, domestic partner students and single graduate and undergraduate students.

Wall & Grand Apartments offer two-and four bedroom fully-furnished, all-inclusive. Each apartment houses four students and includes all utilities, cable and wireless Internet, a complete kitchen and washer/dryer in each unit. Accessible and co-ed apartments are available

ELIGIBILITY: Single SIU Carbondale sophomore, junior, senior and graduate students of any age and freshmen age 21 and older.

Elizabeth Apartments offer furnished efficiency apartments.

ELIGIBILITY: SIU Carbondale single graduate students.

Residence Halls

Single students may live in an East Campus or West Campus resident hall. The traditional residence hall contract includes a dining plan, all utilities, air-conditioning, wireless Internet and cable television. Designated junior/senior housing is available.

Contracts

Students may apply online for an apartment or contract online for a residence hall once they are admitted to SIU Carbondale. More information is online at housing.siu.edu. Direct questions to the University Housing Contracts Office at (618) 453-2301 or housing@siu.edu.

Parking On Campus

Graduate students parking a motor vehicle on campus must display a valid and appropriate parking permit obtained from the Parking Division. The Parking Division of the Department of Public Safety assists students with parking on campus by issuing a parking decal or a temporary parking permit for individuals with short-term parking needs. Parking regulations are

enforced twenty-four hours a day, seven days a week and can be reviewed at our website. Applications for parking privileges can be completed online at <http://www.parking.siu.edu>. The type of decal an applicant is eligible to receive and the date of purchase determines decal cost. Graduate students with an assistantship do not qualify for faculty/staff decals.

The Parking Division office is open 7:30 a.m - 4:30 p.m. Monday through Friday. After hours, please contact the SIU Police Department for parking guidance at (618) 453-3771.

Please visit the Department of Public Safety website at <http://www.parking.siu.edu> for additional parking information and policies or contact us at (618) 453-5369 or parkingsupervisors@dps.siu.edu.

Center for International Education

The office of the director for Center for International Education (CIE) is responsible for developing and supporting faculty, staff, and students in international education. The office administers International Development, Study Abroad, International Students and Scholars, and International Undergraduate Admissions.

Primary goals include increasing the numbers of externally funded grants and contracts in the international arena for SIU; increasing international enrollment, serving international students, and providing international opportunities for faculty and students. Units of CIE are located at 425 Clock Tower Drive in the northwest section of Woody Hall facing the clock tower.

International Development

The Office of International Development provides university-wide leadership, coordination, and support for a variety of international activities. These activities include research and dissemination of information on external funding opportunities, development and administration of grants and contracts, maintenance of an international projects database, administration of international linkage agreements, coordination of Women and International Development activities, sponsorship of international forums, administrative support for international alumni, international student recruitment, and assistance with international visitors and protocol. A major focus of office activity is to assist faculty with grant proposals, training contracts, and related activities of an international nature.

The Office of International Development is located at 425 Clock Tower Drive in the northwest section of Woody Hall facing the clock tower (618-453-7674). The web address for the office is www.cie.siu.edu/internationalstudents.

International Students and Scholars

The International Students and Scholars division provides comprehensive programs and services for international students and scholars from prearrival correspondence to post-graduate concerns. These programs and services include processing of undergraduate admission applications, serving as liaison with foreign governments and sponsoring agencies, providing certification for foreign currency exchange, and other needs. This office has been designated by the U.S. Citizenship and Immigration Services (USCIS) as having the official responsibility for interpretation and adherence to USCIS laws and regulations as they apply to non-immigrant students and faculty. Also des-

ignated responsible officers administer proper compliance with the Exchange Visitor Program for the University. Assistance with USCIS regulations, forms, and procedures is provided to all non-immigrants related to University and broader community affairs.

Integral educative services include orientation programs, arrival and housing assistance, personal counseling and referral, a *Handbook for International Students and Faculty*, a newsletter (The International Dateline), advisement of international student associations, and a re-entry workshop for internationals going home.

Special programs which promote an international dimension of cross-cultural exchange to the broader community are provided. An annual International Festival and various national day celebrations are held. The Community Programs subdivision in cooperation with the International Friends Club coordinates a Host Family Program, International Speakers' Bureau, English in Action, Language Exchange, American and International Cooking Exchange, an International Spouses Group, and a Loan Closet.

The International Students and Scholars division is located at 425 Clock Tower Drive in the northwest section of Woody Hall facing the clock tower (618-453-5774). The web address for the office is www.cie.siu.edu/internationalstudents.

Study Abroad Programs

Study Abroad Programs coordinates overseas services for American students, including international grant programs, exchanges, and faculty-led Global Seminars. It is the central referral point for information on the student Fulbright program and on the British Marshall, National Security Education Program, and Rhodes scholarships. Graduate students may also participate in inter-university international exchange programs and in travel/study programs offered during the summer and intercession periods under the auspices of this division.

Study Abroad Programs is located at 425 Clock Tower Drive in the northwest section of Woody Hall facing the clock tower (618-453-7670). The web address for the office is www.cie.siu.edu/sa.

Economic and Regional Development

The University established the Office of Economic and Regional Development (OERD) in 1986 as a means to improve the quality of life and economic climate in southern Illinois. OERD's mission is to establish and support an environment to foster innovation, commercialize University discoveries, and advance entrepreneurship and economic development within SIU and throughout the region. Located in SIU Research Park south of campus across from Saluki Football Stadium, OERD administers the Illinois Small Business Development Center at SIU, International Trade Center, Illinois Manufacturing Excellence Center, The Small Business Incubator Programs including the Saluki Innovation Lab and Saluki Ventures, Community Development and Outreach, Business Innovation and Research, and SIU Research Park. Additionally, the department manages several other regional projects and training programs to support entrepreneurs, inventors, and regional community partners. Individuals or businesses may rent space in the Dunn-Richmond Economic Development Center for meetings, conferences

or receptions. Space may also be leased within the Research Park for new business start-up or existing business expansion. For more information about OERD's programs and services, access our website at www.econdev.siu.edu.

Student Health Services

Student Health Services is AAAHC accredited and is one of the largest and most comprehensive health centers in the nation. We serve as a medical facility and health information resource for a richly diverse campus community, supporting students in the achievement of their academic goals and personal development through the creation of a healthy campus. For more information, call 618-453-3311 or visit our website at www.shc.siu.edu.

OUR SERVICES INCLUDE:

Saluki Health Web Portal

From the Student Health Services' website, students can access the Saluki Health Web Portal with their SIU Network ID and Password. In the secure portal, students have many options including: make, view, and cancel appointments, send secure messages to the e-nurse, complete required forms, request a prescription refill. Go to our website at www.shc.siu.edu for more information.

Medical Clinic

Medical problems may interfere with your ability to succeed academically. Our Medical Clinic offers diagnostic services including lab and x-ray, treatment, and follow-up care. The Medical Clinic is known for delivering exceptional and responsive care. In most instances, students with an urgent medical need may be seen the same day they call for an appointment. Students may schedule an appointment by accessing the Saluki Health Web Portal anytime (www.shc.siu.edu) Monday–Friday 8:00 am - 4:30 pm.

Wellness and Health Promotion Services (WHPS)

WHPS provides current and accurate health information about important lifestyle decisions. Our professional staff provides resources and programs in nutrition, sexual health, stress management, alcohol and other drug use, and other areas of wellness that impact student success. For more information, call 618-536-4441.

Counseling and Psychological Services (CAPS)

College is a time of change, transition and growth. At times, students find it useful to seek the assistance of a caring professional. Each year 1 out of 10 SIU Carbondale students seek services at CAPS. Counseling and Psychological Services provides crisis walk-in counseling, group, individual, and couples counseling to SIU Carbondale students. Our staff of professional psychologists and counselors is trained to help you discover ways to cope more effectively with problems in day-to-day living. The staff has a commitment to meet the needs of individuals from diverse backgrounds including differences of culture, race, gender, sexual orientation, ability, and religion/spirituality. CAPS is located in the Student Health Center on the second floor, Room 253. For more information call 618-453-5371 or visit our website www.shc.siu.edu.

Sports Medicine & Physical Therapy

We offer a comprehensive approach towards the evaluation and treatment of activity-related injuries and physical impairments. After evaluation, recommendations are made which may include a supervised rehabilitation/treatment plan, a self-care plan or referral to a physician. Our therapy pool provides patients an aquatic environment to facilitate the rehabilitation process. Call 618-453-1292 for an appointment.

Psychiatry

Students can experience psychiatric difficulties which interfere with their academic and personal lives. The Psychiatric Clinic is staffed with a psychiatrist and psychiatric nurse who work closely with the psychologists and mental health professionals at the Counseling Center. Services include psychiatric evaluation and medication management. Call 618-453-4346 for an appointment.

Student Dental Service

Good oral care is one of the easiest ways to positively impact your overall health. We offer emergency, routine and preventive dental care for students. Routine dental services are provided on a fee-for-service basis. For an appointment or more information, call 618-536-2421.

Pharmacy

We have a full service pharmacy. You may fill prescriptions at our pharmacy from any licensed physician. In addition to prescriptions, the pharmacy has a selection of over-the-counter items available for purchase. You may purchase all pharmacy items with normal payment methods or by charging it to your Bursar account or Debit Dawg. Private insurance and Medicaid cards are not accepted. For pharmacy information, call 618-453-4417.

Insurance Benefits

The Student Medical Insurance Plan provides health insurance coverage that complements the on-campus primary care services with benefits for off-campus services such as hospitalization, surgery and specialty care. Most students are automatically enrolled in the Student Medical Insurance Plan as a condition of SIU Carbondale enrollment. Students with other health insurance coverage may be eligible for a refund. For more information go to our website at www.shc.siu.edu or call 618-453-4413.

Immunization Compliance

Illinois law requires that all students born after January 1, 1957, provide documentation for two (2) vaccinations against Measles, Mumps, & Rubella (MMR) after the age of one (1), and Tetanus Diphtheria (Td, Tdap, Dt, DPT) within the last 10 years. All international students, regardless of date of birth, must also complete a tuberculosis screening at the Student Health Center and provide additional documentation of three Tetanus Diphtheria vaccinations, one of which is within the last 10 years. Elective immunizations such as Meningitis, Hepatitis, Flu and travel vaccinations are recommended and available but not required. Call 618-453-4326 for more information.

For after hours emergencies, call 911 or go to the emergency room. Your Student Medical Insurance will not cover non-emergent ER visits.

Student Health Services
374 E. Grand Avenue
Mail Code 6740
Carbondale, IL 62901
Ph: 618-453-3311
Fax: 618-453-4449
Email: shcinfo@siu.edu
www.shc.siu.edu

Disability Support Services

The University is committed to making all services, programs, and activities equally accessible to students with disabilities in integrated settings. Disability Support Services (DSS) provides federally mandated academic and programmatic support services to students with disabilities. DSS provides note takers, sign language interpreters, speech to text, adapted testing, adapted textbooks and course materials, and other services to qualified students with disabilities. Other disability services are located throughout the University in integrated settings. DSS provides centralized coordination and referral.

In order to utilize DSS services, students generally come to the DSS office to open cases. These transactions involve interviews, reviewing student-supplied documentation, and completing Accommodation Forms.

Documentation of disabilities should specify particular disabilities, be generated by appropriate professionals (medical doctors, psychologists, psychiatrists, etc.), and be reasonably current. Ideally, there should be recommendations for particular accommodations.

Students are responsible for identifying themselves to DSS, for providing documentation, and for requesting accommodations.

DSS staff tries to be available on a walk-in basis, but students may ensure prompt attention by calling ahead for appointments.

DSS can be reached at: Voice (618) 453-5738; TDD (618) 453-2293, or FAX (618) 453-5700. E-mail: dsssiu@siu.edu. Visit the office website at <http://disabilityservices.siu.edu/>, or come by the office in Woody Hall B150.

Center for English as a Second Language

The Center for English as a Second Language (CESL) is a unit of the Department of Linguistics on the campus of Southern Illinois University Carbondale and is staffed by members of the University faculty. The intensive English language program at CESL is open to prospective University undergraduate and graduate students, professionals and others wanting to learn English as a second language.

Graduate students who complete or place out of the highest intensive level may enroll in a special Graduate Student English course specifically designed to prepare them for graduate studies. Activities involving oral reports, research papers, critical reviews, and specialized readings associated with the individual student's major field of study are included.

International Graduate Teaching Assistants recommended by their departments may take a specialized course of instruc-

tion for prospective teachers. This course includes oral language, aspects of culture that affect the classroom and teaching strategies. Mini-lessons delivered by ITAs are recorded and critiqued with a view toward improving the teacher's delivery in the English language.

Conditional admissions for English language proficiency are available only with departmental approval. For the English language proficiency requirement to be met, students must successfully complete and pass Graduate School English (GSE) AND submit a minimum TOEFL score as required by the student's individual department. All admissions requirements will be reflected on students' admission letters.

The CESL office is in Faner 3242, 618-453-2265. The CESL web address is <http://www.cesl.siu.edu/>.

Policy Accommodating Religious Observances of Students

Admissions/Registration

The University's admissions process provides ample opportunity for admission and registration activities without conflicting with religious holidays and observances. However, students may receive another appointment when an appointment for admission counseling, or an appointment for academic advisement, or an appointment for registration for classes falls on a date or at a time that would conflict with the student's observances of major religious holidays. The individual student must notify in writing the appropriate admissions officer or academic adviser of the conflict with the student's observance of the religious holiday. That notification shall be made immediately after the student's receipt of the appointment or at least five work days prior to the appointment time, whichever is later.

Class Attendance

Students absent from classes because of observances of major religious holidays will be excused. Students *must notify the instructor at least three regular class periods in advance of an absence from class for a religious holiday* and must take the responsibility for making up work missed.

Examinations

Instructors are requested not to schedule class examinations on dates that would conflict with major religious holidays. In the event an examination must be scheduled on a date that conflicts with a student's required observance of a religious holiday, the student should be given reasonable opportunity to make up the examination. It is the student's responsibility to notify the instructor of the class when the examination will be missed. That notification must occur at least three regular class meeting periods in advance of the absence or at the time the announcement of the examination is made, whichever is later.

Grievance Procedure

A student who believes that he or she has been unreasonably denied an educational benefit due to his or her religious belief or practices may petition in writing as follows:

Cases involving class attendance or class examinations that are unresolved at the class instructor level may be appealed by the student by filing a petition in writing, within thirty (30) calendar days of the incident being appealed, to the chair or coordinator of the department or program in which the course is

offered. In the event the case is not resolved to the student's satisfaction at the department/program level within five (5) working days after the chair's receipt of the petition, the student may petition in writing to the dean of the school or college to which that teaching department or program reports. The student's petition to the school or college level must be filed with the dean within five (5) working days of the decision at the department level. Should the case not be resolved to the student's satisfaction at the school or college level within five (5) working days of the petition filing at that level, the student may petition the Provost. If the student is still not satisfied at that level within the five (5) working day time period, he or she may petition to the Chancellor within another five (5) working days. Decisions of the Chancellor may be appealed to the President, and to the Board of Trustees if necessary, in accordance with Bylaws of the Board of Trustees.

In cases involving admissions, *the grievance process should follow the time frames described above*, with the initial petition being filed with the Graduate School Dean, which is the only filing point prior to the Provost.



2/ Academic Programs, Graduate Faculty, and Courses



Academic Programs, Graduate Faculty, and Courses

The academic programs, graduate faculty, and course descriptions are outlined in this chapter.

The official descriptions of programs leading to graduate degrees are arranged below in alphabetical order. The faculty affiliated with each program is listed at the beginning of the description and the courses at the end. The college or school in which the program is located is noted and web and e-mail addresses are shown at the right margin. Admission and degree requirements which are listed in Chapter 1 are minimum standards. The student should consult the specific program description for additional criteria imposed by the department. All programs are cross-listed to aid in locating the official description. Several departments offer one or more concentrations as noted in Chapter 1 within the major, the requirements for these concentrations may be found in the program description.

Graduate instruction is the responsibility of the graduate faculty. The faculty are arranged in terms of their departmental affiliations. Faculty teaching in interdisciplinary programs are listed under the appropriate programs and are identified as to the department in which they hold an appointment. The first of the two dates listed with the name of a faculty member indicates the year in which the highest degree was earned; the second date indicates the year when the person first became a faculty member at Southern Illinois University Carbondale.

The 400- and 500-level courses offered by Southern Illinois University Carbondale are listed numerically after each program description. The first entry for each course is a three-digit identification numeral. Courses numbered 400–499 are open to both seniors and graduate students, unless designated otherwise. Courses numbered above 499 are for graduate students only. Following the course identification number is another number which indicates maximum credit allowed for the course. The maximum may vary, and specific semester hours may be assigned for each term a course is offered. Following the course description may be prerequisites which must be satisfied before a student will be permitted to enroll. Graduate students will not receive graduate credit for Pass/Fail grades taken at the 400 level. Graduate credit is awarded for 500-level courses which have been approved to be graded *S/U* (Satisfactory/Unsatisfactory) only. All courses offered in a specific term will be listed in the appropriate Schedule of Classes which can be found at: <http://registrar.siu.edu/schedclass/>

Accountancy
 Advanced Energy and Fuels
 Management
 Agribusiness Economics
 Agricultural Sciences
 Animal Science
 Anthropology
 Applied Linguistics
 Applied Physics
 Architecture
 Art & Design
 Art History and Visual Culture
 Behavior Analysis and Therapy
 Biological Sciences
 Biomedical Engineering
 Business Administration
 Chemistry
 Civil and Environmental Engineering
 Communication Disorders and Sciences
 Communication Studies
 Community Health Education
 Computer Science
 Counselor Education
 Creative Writing
 Criminology and Criminal Justice
 Curriculum and Instruction
 Curriculum and Instruction Secondary
 Education
 Economics
 Educational Administration
 Electrical and Computer Engineering
 Engineering Science

English
 Environmental Resources and Policy
 Fire Service and Homeland Security
 Management
 Food and Nutrition
 Foreign Languages and Literatures
 Forestry
 Geography and Environmental
 Resources
 Geology
 Geosciences
 Health Education
 Higher Education
 History
 Kinesiology
 Legal Studies
 Mass Communication and Media Arts
 Mathematics
 Mathematics and Science Education
 Mechanical Engineering
 Medical Dosimetry
 Mining Engineering
 Molecular Biology, Microbiology, and
 Biochemistry
 Molecular, Cellular, and Systemic
 Physiology
 Music
 Pharmacology and Neuroscience
 Philosophy
 Physician Assistant
 Physics
 Plant Biology

Plant, Soil and Agricultural Systems
 Political Science
 Psychology
 Public Administration
 Quality Engineering and Management
 Recreation
 Rehabilitation Administration
 Rehabilitation Counseling
 Social Work
 Sociology
 Special Education
 Teaching English to Speakers of Other
 Languages
 Theater
 Workforce Education and Development
 Zoology

Certificates

Addiction Studies
 Anatomy
 Art History
 Earth Science
 Gerontology
 GIS
 Histotechnology
 Sustainability
 Women, Gender & Sexuality Studies

Accountancy

COLLEGE OF BUSINESS

Graduate Faculty

Burnett, Royce D., Associate Professor and Director, C.P.A., C.M.A. C.G.M.A., Ph.D., Oklahoma State University, 2003; 2009. Cost and Managerial.

Karnes, Allan, Professor, *Emeritus*, C.P.A., M.Acc., J.D., Southern Illinois University Carbondale, 1986; 1977. Taxation and auditing.

Morris, Marc E., Assistant Professor, J.D., Ph.D., Southern Illinois University Carbondale, 2009; 2009. Taxation and Financial.

Hendricks, Scott P., Clinical Assistant Professor, C.P.A., M. Acc., J.D. Southern Illinois University, 1983.

Odom, Marcus, Professor, C.P.A., Ph.D., C.F.E., Oklahoma State University, 1993; 1998. Accounting Information systems and auditing.

O'Donnell, Ed, Associate Professor, C.P.A., Ph. D., University of North Texas, 1995; 2009. Auditing and Accounting Information Systems.

Ortegren, Marc A., Assistant Professor, Ph.D., Texas Tech University, 2010.

Wacker, Raymond, Associate Professor, *Emeritus*, C.P.A., Ph.D., University of Houston, 1989; 1989. Taxation.

The objective of the Master of Accountancy (M.Acc) degree program is to provide an opportunity for students to achieve greater breadth and depth in the study of accountancy than is possible in the baccalaureate program. As preparation for entry into a dynamic profession the curriculum fosters clear, logical, and analytical thought processes, effective oral and written communications, and life-long learning skills. Graduates pursue careers as professional accountants in public practice, industry, financial institutions, government, and other not-for-profit organizations.

Admission

Applicants for admission to the program are required to:

1. Complete all requirements for admission to graduate study as specified by the Graduate School.
2. Complete the Graduate Management Admissions Test (GMAT). Information regarding the GMAT is available through: Graduate Management Admission Test, Educational Testing Service, Box 966, Princeton, NJ 08540. The GMAT requirement is waived for students with an undergraduate major in accountancy from a 4-year undergraduate AACSB accredited institution having an overall grade point average of 3.3 (on a 4.0 scale).

The results of the test must be mailed directly to the director of the M.Acc. Program.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Accountancy. Applicants must pay this fee by credit card.

Admission to the program is based on a composite of 1)

undergraduate grade point average times 200, and 2) GMAT overall score. These two factors are added together to arrive at a composite score. A composite score of 1100 is required to be admitted into the program. For example, an undergraduate grade point average of 3.2 with a GMAT of 550 would yield a composite score of 1190.

Students whose native language is not English will be required to obtain an acceptable score on the Test of English as a Foreign Language (TOEFL) examination before being admitted to the Master of Accountancy degree program.

Differential Tuition and Technology Fee

Starting Fall 2008, the College of Business has implemented a differential tuition surcharge of 15% of applicable tuition for new College of Business majors. The differential tuition surcharge will be assessed at the in-state tuition rate and will be capped at 15 credit hours per semester. If students are charged the differential tuition surcharge, the technology fee (see item below) will not be assessed.

The College of Business assesses College of Business majors a technology fee of \$6.00 per credit hour for Fall and Spring semesters up to twelve semester hours and Summer up to six semester hours. The technology fee is being phased out and will be subsumed under the differential tuition surcharge (see item 16 below). Consequently, students will be charged either the technology fee or the differential tuition surcharge but not both.

Degree Requirements

The Master of Accountancy degree program includes two concentrations from which to choose: 1. Taxation, and 2. Audit/Information Systems. Degree requirements are dependent upon the specialization chosen.

Taxation Concentration:

Accountancy Studies (6 hours)

Two (2) of the following seven (7) courses must be completed:

ACCT 521 (3)	Emerging Issues in Accountancy
ACCT 532 (3)	Advanced Managerial Accounting
ACCT 562 (3)	Internal Auditing
ACCT 563 (3)	Advanced Auditing
ACCT 567 (3)	Fraud Examination
ACCT 571 (3)	Governmental Accounting
BA 514 (3)	Ethics of Business

Taxation Studies (18 hours)

Six (6) of the following eight (8) courses must be completed:

ACCT 541 (3)	Federal Income Tax Concepts
ACCT 542 (3)	Tax Research and Procedure
ACCT 543 (3)	Corporate Taxation
ACCT 544 (3)	Partnership Taxation
ACCT 545 (3)	State and Local Taxation
ACCT 546 (3)	Estate and Gift Tax
ACCT 547 (3)	Tax Accounting Principles
ACCT 548 (3)	International and Interstate Taxation

General Electives (6 hours)

Two (2) electives (selected in conjunction with the Director of the Master of Accountancy Program) must be completed.

Auditing & Accounting Information Systems Concentration:

Accountancy Studies (6 hours)

Two (2) of the following five (5) courses must be completed:

ACCT 521 (3)	Emerging Issues in Accountancy
ACCT 532 (3)	Advanced Managerial Accounting
ACCT 543 (3)	Corporate Taxation
ACCT 571 (3)	Governmental Accounting
BA 514 (3)	Ethics of Business

Auditing & Accounting Information Systems Studies (18 hours)

Six (6) of the following nine (9) courses must be completed:

ACCT 560 (3)	Information Technology Auditing
ACCT 562 (3)	Internal Auditing
ACCT 563 (3)	Advanced Auditing
ACCT 567 (3)	Fraud Examination
ACCT 565 (3)	Advanced Accounting Information Systems
ACCT 566 (3)	Accounting Research
BA 560 (3)	Management of Info Systems
BA 562 (3)	Info Systems and Design

General Electives (6 hours)

Two (2) electives (selected in conjunction with the Director of the Master of Accountancy Program) must be completed.

Foundation Requirements

A student who does not have an undergraduate business degree will be required to complete the following (or equivalent):

ACCT 220	Accounting I
ACCT 230	Accounting II
FIN 270, or FIN 280 & FIN 380	The Legal and Social Environment of Business (FIN 270); Business Law I (FIN 280); Business Law II (FIN 380)
MGMT 304	Introduction to Management
FIN 330	Introduction to Finance
MKTG 304	Marketing Management

A student not having an accountancy degree will be required to complete the following (required to be completed **prior to** enrollment in any graduate course for which the course is a prerequisite):

ACCT 321	Intermediate Accounting I
ACCT 322	Intermediate Accounting II
ACCT 331	Cost Accounting
ACCT 360	Accounting Information Systems
ACCT 341	Federal Income Taxation
ACCT 460	Auditing

Note: The student may request that undergraduate courses taken at universities other than Southern Illinois University (SIU), or that other undergraduate courses taken at SIU be evaluated as possible substitutes that would meet the above requirements.

The full-time student who qualifies for the minimum program in terms of course work requirements normally may expect to complete the Master of Accountancy degree in one calendar year (two semesters and one summer session).

In order to meet the graduate requirements, the students

must obtain a 3.0 grade point average (4.0 = A) and obtain a B or better in eighty percent of all graduate level courses taken after admission to the M.Acc. program.

Concurrent J.D. and M.Acc. Program

A student who has been admitted separately to the School of Law and to the M.Acc. program may apply for permission to study concurrently for both the Juris Doctor and Master of Accountancy degrees. This permission must be requested from both the School of Law and the School of Accountancy, ordinarily prior to entry into the second year curriculum of the School of Law.

During the first academic year of concurrent work on the two degrees, the student enrolls only in the first-year law curriculum. In any subsequent academic term, the student may enroll for courses either in the School of Law or in the Master of Accountancy program. A student registered for both law and graduate courses in the same term must enroll for a minimum of 10 hours in law, and 12 semester hours in total, in order to meet A.B.A. residence requirements and the academic requirements of the School of Law.

Completion of the concurrent program requires that the student successfully complete 81 semester hours of law courses and 30 semester hours of courses that meet M.Acc. requirements. Up to 9 semester hours of the 30 may be School of Law courses which are also part of the 81 hours required for the Juris Doctor degree. School of Law courses counting for graduate credit toward the Master of Accountancy degree must be approved by the director of the Master of Accountancy program. Further, no more than 6 of the 30 semester credit hours may be taken in courses at the 400 level for graduate credit.

Double Major Policy

Any graduate student wishing to pursue a double major for a master's degree that includes business administration must satisfy the following requirements in addition to any requirements stated in the Graduate Catalog.

- The individual must satisfy all requirements for admission to the relevant master's program in business (M.B.A or M.Acc.).
- The individual must satisfy all foundation requirements of the relevant master's program in business.
- The individual must complete all core classes, secondary core (M.Acc.) courses, and elective course requirements for the relevant master's program in business.
- No more than six hours of coursework outside the College of Business and Administration may be counted toward elective requirements in the relevant master's program in business.

Courses (ACCT)

411-3 Enterprise Networks and Communication. (Same as Management 411) Application of data communications and network technologies for improving business. Coverage includes, but is not limited to: introduction to the principles of data transmission technology, various communication architectures and protocols, basic networks design principles, internet and intranet technologies, data security issues and elements of network management. Prerequisite: C or better in MGMT 345.

421-3 Advanced Accounting. Accounting principles and

procedures relating to specialized topics, including partnership equity, installment and consignment sales, fiduciaries, international operations, branches, and business combinations. Prerequisite: a grade of C or better in ACCT 322. Restrictions: Accounting majors or minors, junior standing or higher.

431-3 Advanced Cost Accounting. Managerial decision making; profit planning and control through relevant costing, return on investment and transfer pricing, determination of cost behavior patterns, analysis of variances, capital budgeting, inventory models, probabilities, statistical methods, and operations research. Prerequisite: ACCT 331 with grade of C or better. Restrictions: Accounting majors or minors, junior standing or higher.

441-3 Advanced Tax. Study of income tax problems which arise from sole proprietorship, partnership, limited liability company, corporation, estate, and trust. Student does research in source materials in arriving at solutions of complicated problems. Prerequisite: ACCT 341 with grade of C or better. Restrictions: Accounting majors or minors; junior standing or higher.

460-3 Auditing. Provides an overview of processes for planning and executing a risk-based audit; explains the procedures auditors use to evaluate internal controls; describes the tests auditors conduct to substantiate financial statement accounts. Prerequisites: a grade of C or better in 322. Restrictions: junior standing and limited to accounting majors, minors, and those with consent of school.

465-3 Internal Auditing. The course covers internal audit from a broad perspective to include information technology, business processes, and accounting systems. Topics include internal auditing standards, risk assessment, governance, ethics, audit technique, and emerging issues. It covers the design of business processes and the implementation of key control concepts and will use a case study approach that addresses tactical, strategic, systems, and operational areas. Restrictions: Accounting majors or minors.

468-3 Forensic Accounting. Coverage of forensic accounting processes and tools used in the detection and prevention of fraud against the company. Topics include skimming, cash larceny, check tampering, billing schemes and others. An emphasis of the course will be upon the use of computer aids. Restrictions: Accounting majors or minors.

512A-E-3 to 15 (3 per topic) Accounting Research Methods Seminar-Theoretical Frameworks. Describes and explains methods for examining research questions about professional judgment in accounting. Sections include (a) Theoretical Frameworks, (b) Research design, (c) Interpreting data, (d) Alternative Research Methods, and (e) Special topics. May be repeated for credit but sections (a) through (d) can be taken only once.

514-3 Ethics of Business. (Same as BA 514) Philosophical implications of contemporary issues in business ethics. Restricted to enrollment in M.Acc. or consent of department.

521-3 Emerging Issues in Accountancy. Identifies developing areas in financial accounting and forces students to research the issues, to think critically, evaluate alternatives and communicate conclusions in oral and written form. International accounting, not-for-profit, standard setting and regulation, and other developing issues are addressed. *The Journal of Accountancy*, other professional journals, and guest speakers. Prerequisite:

ACCT 321, ACCT 322.

532-3 Advanced Management Accounting. Management planning and control decisions and design and evaluation of management accounting systems requiring formal models and application of vigorous analytic reasoning. Integration and synthesis of techniques such as regression analysis, linear programming, decision theory and behavioral science for important decisions of the firm. Information economics. Contemporary research directories. Restrictions: enrollment in M.Acc. or M.B.A. program.

541-3 Tax Concepts. Provides the student with an understanding of the nature of the federal tax law and an appreciation of the law's impact upon business decisions both for individuals and companies. Prerequisite: ACCT 441 with C or better.

542-3 Tax Research and Procedure. Provides the student with a working knowledge of the tax practitioner's methodology applied to the solution of both routine and complex tax problems. Prerequisite: 441 with C or better.

543-3 Corporate Taxation. (Same as LAW 514) Provides students with in-depth exposure to federal income taxation of corporations and shareholders. Areas explored are corporate formations, distributions, redemptions, liquidations, corporate income tax, accumulated earnings tax, personal holding company tax and affiliated corporations. Prerequisite: ACCT 441 with C or better.

544-3 Partnership Taxation. (Same as LAW 515) Provides students with in-depth exposure to the federal income taxation of partnerships, partners and related LLCs and owners. Areas explored are the definition of a partnership, acquisition of an interest, basis of interest, tax accounting for partnership, subchapter S or LLC operation, distributions, termination, sale or exchange of interest, collapsible partnerships, death or retirement and tax shelters. Prerequisite: ACCT 441 with C or better.

545-3 State and Local Taxation. This course will focus on the legislative and judicial evolution of the present tax systems. Basic concepts of state and local taxation, such as jurisdiction, commerce clause restrictions, uniformity, apportionment and taxation of e-commerce, will be examined. One of the primary objectives of this class is to ensure that students are familiar with the myriad of U.S. Supreme Court decisions delineating the taxing authority of state and local government entities in relation to the commerce, due process, equal protection and supremacy clauses of the U.S. Constitution. Students will also learn to interpret and analyze complex court decisions. Restrictions: enrollment in the M.Acc. or M.B.A. program.

546-3 Estate and Gift Taxation. Provide basic principles of federal estate and gift taxation. Prerequisite: ACCT 441 with C or better.

547-3 Tax Accounting Principles. Provides linkage of accounting skills with tax knowledge through identification of significant differences between tax and financial accounting and selection of tax accounting principles having a significant impact on cash flows. Tax accounting problems for industrial, wholesale and retail companies. Prerequisite: ACCT 441 with C or better.

548-3 International and Interstate Taxation. Examination of tax issues when taxable events or transactions cross international or state borders. Use of transfer pricing for international

taxation purposes. Specific international taxation problems of foreign persons, U.S. citizens living abroad, U.S. shareholders of foreign corporations and problems related to multinational corporations. Also will examine issues of nexus and other principles guiding state taxation of persons and businesses involved in interstate commerce. Prerequisite: ACCT 441 with C or better.

560-3 Information Technology Risk and Controls. Explains how organizations govern their investment in IT through strategic alignment, risk assessment, and performance measurement. Describes processes for evaluating and monitoring the effectiveness of IT general controls related to processing operations, system security, and change management. Prerequisite: ACCT 360. Restriction: enrollment as a graduate student.

562-3 Advanced Internal Auditing. The course covers internal audit from a broad perspective to include information technology, business processes, and accounting systems. Topics include internal auditing standards, risk assessment, governance, ethics, audit technique, and emerging issues. It covers the design of business processes and the implementation of key control concepts and will use a case study approach that addresses tactical, strategic, systems, and operational areas. Restrictions: Accounting majors or minors.

563-3 Advanced Auditing. Explains how auditors evaluate business risk, fraud risk, inherent risk, and control risk to assess the risk of misstatement in accounts while planning an audit engagement. Examines analytical procedures, the code of professional conduct, auditor reporting requirements, and auditor legal liability. Prerequisite: ACCT 460. Restriction: enrollment as a graduate student. Course material fee: \$120.

564-3 Enterprise Systems. Enterprise Systems (ERP systems) and technologies have become prevalent in many companies. This course will examine the technical overview of Enterprise Systems and their impact on organizations. The concepts, fundamentals and framework of the advanced systems will be explored to better understand the integration of Enterprise Systems in an organization. A better understanding of Enterprise Systems and its affect on an organization will be gained. Restriction: enrollment in the M.Acc. or M.B.A. programs.

565-3 Advanced Accounting Information Systems. Advanced study in the systems that are used in companies especially database. Students will not be successful as auditors or internal accountants without database skills. The course would include advanced design issues, advanced query and data analysis skills (for internal and external purposes), db controls, db technology, etc. Prerequisite: ACCT 360.

566-3 Accounting Research. This course will provide research skills that are critical in Accounting. Students will identify a research topic, develop the research questions, conduct the research, and prepare a research document. The student will be exposed to how research is conducted and will develop the necessary skills to perform accounting research.

567-3 Fraud Examination. Fraud examination will cover the principles and methodology of fraud detection and deterrence. The course includes such topics as skimming, cash larceny, check tampering, register disbursement schemes, billing schemes, payroll and expense reimbursement schemes, non-

cash misappropriations, corruption, accounting principles and fraud, fraudulent financial statements, and interviewing witnesses.

569-3 Seminar - Selected Audit/Systems Topics. Provides students with in-depth exposure to audit and/or accounting systems as it relates to selected topics. Topics will vary from semester depending upon instructor and topics of current interest to the accounting discipline.

571-3 Governmental and Not-For-Profit Needs. Financial and managerial accounting concepts peculiar to the planning and administration of public and quasi-public organizations such as governmental units, institutions, and charitable organizations. Also includes the study of governmental auditing standards. Prerequisite: ACCT 321 with a grade of C or better.

591-1 to 6 Independent Study. Directed independent study in selected areas of accountancy. Restriction: enrollment in M.Acc. Program.

595-3 Internship. Supervised work experience in professional accounting. Prerequisite: outstanding record in accounting and recommendation of the department committee on internship. Graded S/U only.

599-3 to 6 Thesis. Restriction: enrollment in M.Acc. Program. 601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded S/U or DEF only.

Administration of Justice

(See Criminology and Criminal Justice for program description)

Advanced Energy and Fuels Management

GRADUATE SCHOOL, COLLEGES OF AGRICULTURAL SCIENCES, BUSINESS, ENGINEERING, LIBERAL ARTS, AND SCIENCE

Advanced Energy and Fuels Management Faculty:

Please see departmental web pages for detailed information on the research activities of individual faculty members. Please see also departmental entries in this catalog.

Achenbach, Laurie, *Microbiology*

Altman, Ira, *Agribusiness Economics*

Anderson, Kenneth, *Geology*

DeRuntz, Bruce, *Technology*

Haddock, John, *Microbiology*

Lightfoot, David, *Plant, Soil, and Agricultural Systems*

Mathias, James, *Mechanical Engineering and Energy Processes*

Mondal, Kanchan, *Mechanical Engineering and Energy Processes*

Secchi, Silvia, *Geography and Environmental Resources*

Wiltowski, Tomasz, *Mechanical Engineering and Energy Processes*

The Professional Science Master's (PSM) in Advanced Energy and Fuels Management is a 36-hour post-graduate degree that combines graduate level technical training in energy resources and technology with opportunities for the development of workplace skills. This intensive program is designed to prepare graduates for leadership positions in the energy industry. The program includes nine (9) business-related credit hours, nine (9) science/technology-related credit hours, three (3) credit hours in energy policy studies, nine (9) credit hours of graduate level electives, and a six (6) credit hour capstone internship completed with an industrial partner.

Program Description

In the energy sector, increasing global energy demand coupled with a need to reduce the sector's environmental impact are driving unprecedented change. Industry leaders are discovering new ways to create energy from both alternative and traditional resources. At the same time, firms in the energy sector are developing and employing new technologies to reduce the environmental impact of existing energy resources, as well as to improve the manner in which energy and fuels are extracted, refined, generated, stored, and distributed. Rapid growth and change in the energy sector has created a strong demand for personnel in management and leadership roles who are trained in both the technical aspects of the energy industry and who also possess workplace skills. The overarching academic objective of the Professional Science Master's (PSM) in Advanced Energy and Fuels Management is to satisfy this need by providing high quality professional training that ensures graduates have acquired the diverse skill set sought and demanded by industry.

The proposed course of study achieves this objective by providing core technical training in energy resources, energy production technology and energy policy issues coupled with

business training in project and personnel management, business leadership skills and fiscal management. In addition to these core requirements, students participating in this program will have the opportunity to take nine (9) credit hours of electives to allow them to gain additional specialized graduate level training related to their own specific interests and career goals.

The PSM program consists of a 36-hour curriculum structured in accord with the PSM model originally developed by the Sloan Foundation. The program is designed to be completed in one academic year (based on full time study), with additional course work to be completed in the preceding summer semester and the capstone internship to be completed in the final summer semester. This intensive program is designed to minimize the time students need to be away from full-time employment while also maintaining academic rigor.

This program provides the diverse skill set demanded by industry. It includes business, science/technology and policy elements, broken down as follows:

- 9 Business-related credit hours
- 9 Science/technology-related credit hours
- 3 Credit hours of energy policy studies
- 9 Credit hours of electives
- A capstone 6 credit hour internship in industry completed over the summer semester following completion of other requirements

The program is composed of the following courses. All specified courses are required (core) curriculum elements. A list of electives is included, but this list is not all inclusive.

Fall Semester (12 hours)

Fall Semester (12 hours)

ME 568-3 Alternative Energy and Fuel Resources

ME 446-3 Energy Management

IMAE 450-3 Project Management

BA 510-3 Managerial Accounting & Control Concepts

Spring Semester (12 hours)

GEOG 522 -3 Environmental and Energy Economics

BA 540-3 Managerial & Organizational Behaviour

Elective (3hrs)

Elective (3 hrs.)

Summer Session (6 hours)

AEFM 585-6 Internship in Advanced Energy and Fuels Management

This internship requires the student to complete a specified project for the employer supporting the internship, the nature of which will be approved by PSM faculty in consultation with the employer prior to the initiation of the project. The intern is required to submit both a written and oral project report, to both the employer and PSM faculty.

Fall Semester (6 hours)

GEOG 588 -3 Global Energy Resources

or Science course (3 hrs.)

Elective (3hrs)

Program Admission and Graduate Requirements.

An admission committee, composed of the program director and members of the faculty advisory board, will oversee admission of candidates to the program. Preferred candidates are individuals who hold a baccalaureate degree in natural sciences, physical sciences or engineering. Candidates not holding an appropriate baccalaureate degree may be required to complete necessary prerequisite courses prior to admission to the program. Catalog course descriptions for elective courses indicate the nature of any prerequisites or consent of instructor. Academic exceptions may be granted in specific circumstances for individuals with extensive professional experience or other background that, in the opinion of the admissions committee, qualifies the candidate for admission.

- SIU's graduate school admission requirements are available at: <http://gradschool.siu.edu/about-us/grad-catalog/index.html>.
- Graduation requirements are successful completion of all course work and the capstone internship, with an overall GPA ≥ 3.0 .
- SIU's graduate school graduation requirements are available at: <http://gradschool.siu.edu/about-us/grad-catalog/index.html>.

Core Courses

BA 510-3 Managerial Accounting and Control Concepts. Basic cost concepts, measures, methods and systems of internal accounting useful for managerial planning, implementation, control and performance evaluation. Includes cost analysis relevant for non-routine decision-making. Prerequisite: BA 410 and MBA program "computer ability" foundation requirement met, or equivalent. Restricted to enrollment in College of Business graduate program or consent of department.

BA 540-3 Managerial and Organization Behavior. Case analyses of human problems in the business organization. Application of findings of behavioral science research to organization problems. Development of direction and leadership skills. Prerequisite: BA 440 or equivalent. Restricted to enrollment in College of Business graduate program or consent of department.

IT 450-3 Project Management. This course is designed to provide students with an overview of the project management process followed by an in-depth examination of the activities needed to successfully initiate, plan, schedule, and control the time and cost factors of the project. Prerequisite: none.

GEOL 588-3 Global Energy Resources. Ready access to energy is essential to sustaining modern societies. This course will discuss the nature of the resources that have been, are, or potentially could be used to provide energy in the US and around the globe, including fossil fuels, nuclear energy resources, bioenergy resources and emerging energy resources such as geothermal, wind, tidal, and solar energy.

ME 446-3 Energy Management. Fundamentals and various levels of analysis for energy management of commercial buildings and industrial processes and buildings. Use of energy management systems and economic evaluations are required in course projects. Prerequisite: ME 302.

ME 568-3 Alternative Energy and Fuel Resources. The course

covers the alternatives for energy resources and the impact of the human growth on the energy usage and its environmental consequences. The course describes the fossil fuel era, renewable energy resources, and hydrogen fuel era. The fundamentals of each of these fuel types, their conversion to usable energy and the potential of each of these fuels for the future is discussed. Prerequisite: ME 300 and 400, or instructor's consent.

Electives

ABE 440-3 Natural and Environmental Resource Economics and Policy. Students will study the application of socioeconomic principles to problems related to natural and environmental resources. The course covers the policy context within which policies related to natural and environmental resources are developed and implemented as well as the range of policy tools available for addressing environmental/natural resource problems. The institutional setting for dealing with natural and environmental resources is presented along with the role of property rights and entitlements. Contemporary resource problems are used as examples. Prerequisite: six hours of agribusiness economics, economics, or geography; graduate status; or consent of instructor.

ABE 453 Agribusiness Planning Techniques. Application of mathematical programming to agribusiness and farm planning, including enterprise selection, resource allocation, least cost ration formulation, decision making under risk and uncertainty, transportation and location problems. Emphasis placed on modeling problems and interpretation of results. Restricted to: junior standing or consent of instructor.

BA 503-3 Management of Change. The methods and processes of planned change are examined. Special emphasis is placed on the design and implementation of continuous improvement systems and related issues of managing constant change. Change models are viewed in the context of international competitiveness and a dynamic global environment. Restricted to enrollment in College of Business graduate program or consent of department.

BA 530-3 Financial Management. Provide a broad overview of basic concepts, principles, and recent innovations in financial management. Topics covered will include risk and return, valuation, capital budgeting, capital structure and cost of capital, dividend policy, financial planning, international financial management and corporate restructuring. Prerequisite: BA 510, ECON 240 and 241 or equivalent, FIN 330 with a grade of C or better. Restricted to enrollment in College of Business graduate program or consent of the department. Students who have had FIN 361 or its equivalent or were undergraduate finance majors are not allowed in BA 530 and should take BA 531 instead.

BA 550-3 Marketing Management. A managerial approach to the study of marketing. Emphasis is on the nature and scope of the marketing manager's responsibilities and on marketing decision-making. Prerequisite: BA 450 or equivalent. Restricted to enrollment in College of Business graduate program or consent of department.

ECE 486-3 Clean Electric Energy. History and Future of the Energy Resources and their use as a component of Electrical Systems. Energy Resources (Fossil, Nuclear, Hydro, Fuel Cell, Wind, Solar, Tidal, Waste, Bio-Energy, Oceanic, Renewable,

etc). Environmental and Economical Impacts of Various Energy Sources. Electric Energy Generating Plants. Renewable Energy. Prerequisites: Consent of Instructor.

ERP 502-3 Environmental Decision Making. (Same as ABE 502) The objective of the course is twofold. The first part of the class will be devoted to case studies of environmental decision making which use a variety of approaches to environmental policy. Topics to be covered include market-based environmental management versus regulatory approaches, climate change, conservation and floodplain management policy. The second part of the class will focus on the challenges of interdisciplinary communication and collaboration, methodological research issues and the role of integrated modeling. We will consider different issues such as qualitative and quantitative evidence, validation, and the role of values and objectivity in the scientific process.

GEOL 420-3 Petroleum Geology. The geological occurrences of petroleum including origin, migration and accumulation; a survey of exploration methods, and production problems and techniques. Laboratory study applies geological knowledge to the search for and production of petroleum and natural gas. Prerequisite: GEOL 221, 224.

GEOL 421-3 Organic Geochemistry. The nature, origin and fate of natural and artificial organic materials in rocks and sediments. Topics include characterization of fossil fuels using biological marker compounds, petroleum source rock evaluation, and organic pollutants in the environment. Prerequisite: GEOL 325 or consent of instructor.

MBMB 421-3 Biotechnology. (Same as MICR 421) Topics covered will include the genetic basis of the revolution in biotechnology, medical applications including genetic screening and therapeutic agents, industrial biotechnology and fermentation, and agricultural applications. Three hours lecture. Fall semester. Prerequisite: MICR 302, or consent of instructor.

ME 408-3 Energy Conversion Systems. Principles of advanced energy conversion systems: nuclear power plants, combined cycles, magnetohydrodynamics, cogeneration (electricity and process steam), and heat pumps. Constraints on design and use of energy conversion systems; energy resources, environmental effects, and economics. Prerequisite: ME 400.

ME 435-3 Design of Mass Transfer Processes. Design principles of mass transfer processes. The rate mechanism of molecular, convective and interphase mass diffusion. The design of selected industrial mass transport process operations such as absorption, humidification, water-cooling, drying and distillation. Prerequisite: ME 302.

ME 539-3 Catalysis in Energy Processes. This course spans the full range from fundamentals of kinetics and heterogeneous catalysis via modern experimental and theoretical results of model studies to their equivalent large-scale energy processes. Several processes are discussed including hydrogen production, fuel cells, liquid fuel synthesis. Prerequisite: ME 410 or consent of instructor.

PSAS 433-4 Introduction to Agricultural Biotechnology. (Same as ANS 433) (Same as CSEM 433) (Same as PLB 433) This course will cover the basic principles of plant and animal biotechnology using current examples; gene mapping in breeding, transgenic approaches to improve crop plants and

transgenic approaches to improve animals will be considered. Technology transfer from laboratory to marketplace will be considered. An understanding of gene mapping, cloning, transfer and expression will be derived. Special approval needed from the department.

Advanced Energy and Fuels Management Courses (AEFM)

AEFM 580-3 to 6 Readings. Readings in specialized topics under the direction of an approved graduate faculty member. Graded *S/U* only.

AEFM 585-1 to 6 Internship in Advanced Energy & Fuels Management. Supervised work experience with a public or private agency or firm through which students acquire practical, professional training to complement their course work in effective analysis, synthesis and management of energy processes and fuels as well as in efficiency relating to clean fuel technologies and energy policies relevant to the energy sector. Restricted to enrollment in AEFM.

AEFM 601-1 (per semester) Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on and completing their internship reports. The student must have completed a minimum of 30 hours of course work before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Africana Studies

<http://www.africanastudies.siu.edu/>

COLLEGE OF LIBERAL ARTS

Graduate Faculty:

Brown, Joseph A., Professor, Ph.D., Yale University, 1984; 1997.

Chipasula, Frank M., Professor, Ph.D., Black American Studies, English, Brown University, 1987; 2005.

Gadzekpo, Leo K., Associate Professor and *Interim Chair*, Ph.D., M.F.A., American Cultural Studies, Bowling Green University, 1997; 1998.

Smoot, Pamela A., Clinical Assistant Professor, Ph.D., American History, Michigan State University, 1998; 1999.

There is no approved graduate program in Africana Studies. Four-hundred-level courses may be taken for graduate credit unless otherwise indicated in the course description.

Courses (AFR)

410H-3 African Expressive Culture. (Same as ANTH 410H) This course examines aspects of African expressive culture including the visual arts, music, dance, orature, cinema, drama, and ceremony from an anthropological perspective. Particular attention is given to analysis of African expressive culture in social context and the role of the arts in the practice of politics, religion, medicine, and other aspects of African life. Many of the expressive genres examined deal with historical representation and political resistance. Therefore, this course provides insights into African history and politics through the creative representations of African artists.

416-3 Black Feminist Thought as Theory and Praxis. (Same as CMST 416 and WGSS 416) Explore the roots, contemporary manifestations, and current embodiments of Black feminist thought. Explore the works of Black women to engage in critical thinking and thoughtful dialogue that positions the valuable knowledge, experiences and perspectives of women of color at the center of inquiry while simultaneously discovering spaces for multicultural alliances. Prerequisite: CMST 301I or CMST 341 or consent of instructor.

420-3 Themes in Africana Drama. (Same as THEA 460) Explores significant themes in African and African American drama, with special attention to performance styles and cultural issues.

447-3 Communicating Race and Ethnicity. (Same as CMST 447) Via intercultural theories and methods, this course explores histories, relationships, interactions and recent events by positioning racial and ethnic perspectives at the center of inquiry. The course critically examines the complexities of race, racism, and ethnicity by focusing on how people communicate across racial and ethnic differences in different contexts. Prerequisites: CMST 301I or 341, or consent of instructor.

452A-3 Traditions of Uppity Women's Blues. (Same as MUS 452A, WGSS 452A) Examines the tradition of "uppity" women's blues from the so-called "classic" blues singers of the 19th century (Gertrude "Ma" Rainey, Bessie Smith, Ida Cox, etc.) to the contemporary blues of Saffire, Denise LaSalle and others.

Explores ways blues women challenge conventions of gender and sexuality, racism, sexism, classism, and homophobia. Restricted to junior/senior/ graduate music major or consent of instructor.

452B-3 Blues and Boogie Woogie Piano Styles. (Same as MUS 452B) Traces the history, culture, and stylistic developments of blues and boogie woogie piano. Explores socio-cultural contexts and examines key players, pieces, and musical styles. Restricted to: junior/senior/graduate music major or consent of instructor.

458-3 Bantu Diasporas in Africa & the Atlantic World. (Same as HIST 458) This course examines the origins and development of Bantu language and culture groups in Africa and the Atlantic World from the first dispersal of Bantu-speaking people thousands of years ago through the end of slavery in the Americas. Additionally, the course explores the multiple methods and disciplines used to construct histories of Bantu language and culture groups.

460-3 Slavery and The Old South. (Same as History 460) This course examines slavery and southern distinctiveness from the colonial period to 1861. Discussion topics include the plantation system, race relations, women and slavery, and southern nationalism.

461-3 Black Americans on the Western Frontier. (Same as HIST 461) This course examines the history of African Americans in the American West. Taking both a chronological and thematic approach, it begins with a discussion of early black explorers in the age of encounter, and ends with a focus on black western towns established in the United States by the 1880's.

465-3 Governments and Politics of Sub-Saharan Africa. An examination of the impact of western colonial rule on the societies and politics of Africa, the method by which these colonial areas became sovereign states in the post-World War II era, the role of domestic political institutions, African political thought and behavior, and the development of foreign policies regarding relations with other African states, continental and international organizations, and international organizations, and non-African states.

472-3 Psychology of Race and Racism. (Same as PSYC 470) A review of the history and evolution of the construct of race as a psychological phenomenon. The persuasiveness of race in every sphere of life will be studied, from a multidisciplinary perspective.

473-3 Comparative Slavery. (Same as HIST 473) A comparative study of slavery from antiquity to its abolition in the 19th century with the differing socio-cultural, political and economic contexts; organized chronologically, regionally, and thematically.

475-3 Education and Black America. This course uses the scholarship of cultural anthropology and social studies to look at the history of education in the African American community; how public education affects African American families; how schools shape cultural change and how racial, ethnic peer group, and gender issues help determine curriculum issues.

478-3 Southern Africa, 1650-1994. (Same as HIST 478) An examination of Southern African history with emphasis on South Africa from 1652 to 1994. Topics to be covered include conflicts and wars, migrations and state formations, the economics of minerals, industrialization and the Anglo-Boer War, intertwined histories of race relations, the politics of exclusion and apartheid, and the making of modern South Africa.

491-3 to 6 Independent Readings in Africana Studies. Special

topics, focused on research needs of students who are regularly enrolled in upper-division courses, especially graduate students doing research in Africana related topics in other departments and programs. May be repeated for up to six credit hours. Special approval needed from the director of the Africana Studies program.

494-3 Methodology Seminar in Africana Studies. This course provides the theoretical framework for research in the field of Africana Studies. Students will investigate the foundations of the field of Black Studies, from the argument of Maulana Karenga and Molefi Asante, to the challenges of scholars such as Manning Marable, James Turner and other recent scholars. Students will pursue individual research projects appropriate to various academic disciplines which constitute the field of Africana Studies. May be taken for graduate credit.

495-3 to 9 African Cultural Continuities: Study Abroad. Study abroad 4-6 week program is designed to introduce similarities in culture (food, dance, music, family traditions, religion) of people in Ghana and in the cultures of people in the African diaspora. Class begins on the SIU campus and will re-locate to Elmina and Cape Coast, Ghana, during the first year of a three-year sequence. Other years will locate in areas of the West Indies, Caribbean & Central America. May be taken for graduate credit. Special approval needed from the instructor.

496-3 Slave Narratives. Using complications of the 19th and early 20th century body work known as "Slave Narratives", students will organize research projects that discover selected major themes of Africana Studies. The course will be useful to students from various academic disciplines (such as psychology; Music Sociology; History; Philosophy; Education; Literature; and Theology, among others) as they place Slave Narratives in the center of Africana and American studies scholarship. Maybe taken for graduate credit.

497-3 The U.S. Civil Rights Movement. (Same as HIST 487) This course provides an overview of the history of the Civil Rights Movement while engaging major debates in the field of Black Freedom Studies. Central themes will include the impact of the Cold War, the roles of women, and the relationship of civil rights to black power. We will also discuss the difference between popular memory and historical scholarship as well as the meaning of such discussions for contemporary issues of racial and economic justice.

499-3 to 9 (3 per topic) Special Topics in Africana Studies. Topics vary and are announced in advance. May be repeated as the topic varies. No prerequisites.

499A-3 History of African American Philosophy. (Same as PHIL 451) A survey of major thinkers and themes in the history of African American Philosophy from colonial times to the 20th century. Prerequisite: At least one previous course in Philosophy or Africana Studies with a minimum grade of C.

499B-3 Philosophy of Race. (Same as PHIL 455) A survey of critical examination of a range of theories on the nature and meaning of "race", the intersection of race with class and gender, and the promotion of racial progress. Such theories include racial realism and idealism, racial biologism, cultural race theory, social constructivist theory, integrationism, separatism, racial eliminativism, cosmopolitanism, and especially critical race theory. Prerequisite: At least one previous course in Philosophy or Africana Studies with a minimum grade of C.

499C-1 - 6 Topics in Africana Philosophy. (Same as PHIL 459) A Seminar on varying topics, themes, and figures in African, African American, American, and/or Caribbean Philosophy, e.g., "W.E.B. Du Bois and His Contemporaries", "Pan Africanism", "Philosophies of Liberation", "Black Feminism", "Contemporary African Philosophy" Philosophies of the Caribbean. Prerequisite: At least one previous course in Philosophy or Africana Studies with a minimum grade of C.

Agribusiness Economics

www.agribusiness.siu.edu

agecon@siu.edu

COLLEGE OF AGRICULTURAL SCIENCES

Graduate Faculty:

Altman, Ira J., Associate Professor and *Department Chair*, Ph.D., University of Missouri, 2005; 2006.

Asirvatham, Jebaraj, Assistant Professor, Ph.D., University of Illinois, 2011; 2015.

Beaulieu, Jeffrey R., Associate Professor, *Emeritus*, Ph.D., Iowa State University, 1984; 1983.

Beck, Roger J., Professor, *Emeritus*, Ph.D., Pennsylvania State University, 1977; 1984.

Eberle, Phillip R., Associate Professor, *Emeritus*, Ph.D., Iowa State University, 1983; 1983.

Harris, Kim S., Associate Professor, *Emeritus*, Ph.D., University of Illinois, 1985; 1984.

Herr, William M., Professor, *Emeritus*, Ph.D., Cornell University, 1954; 1957.

Kraft, Steven E., Professor, *Emeritus*, Ph.D., Cornell University, 1976; 1980.

Moon, Wanki, Professor, Ph.D., University of Florida, 1995; 2000.

Rendleman, C. Matthew, Associate Professor, Ph.D., Purdue University, 1989; 1994.

Sanders, Dwight R., Professor, Ph.D., University of Illinois, 1999; 2000.

The Department of Agribusiness Economics (ABE) offers graduate work leading to the Master of Science degree with a major in agribusiness economics. A program of concurrent study leading to the award of two master's degrees, the Master of Business Administration and Master of Science with a major in agribusiness economics can be undertaken. An interdisciplinary degree at the Master of Science level may be achieved by completing requirements as a double degree major.

Graduate students with a minimal undergraduate grade point average of 2.7 (4.0 scale) and demonstrated competence in economics, statistics, mathematics, and agricultural economics are admitted unconditionally to the ABE Master of Science degree programs. Students with insufficient background may be admitted contingent upon demonstration of satisfactory completion of undergraduate courses in deficient areas.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Agribusiness Economics. Applicants must pay this fee by credit card. Inquiries should be directed to the chair of the Department of Agribusiness Economics, Ag Building, Room 226, Mail Code 4410, 1205 Lincoln Drive, Southern Illinois University Carbondale, Carbondale, IL 62901-4410.

Agribusiness Economics Concentration

Through selected coursework and research students may specialize in resource and environmental economics, economic and rural development, agribusiness management and finance, agricultural marketing and prices, farm production management, and international trade and agricultural policy.

The Master of Science degree major in agribusiness economics with a concentration in agribusiness economics is awarded upon completion of required coursework with a minimum graduate grade point average of 3.0 (4.0 scale) in either of two options; a thesis or a non-thesis (research paper) option. For both options at least 15 hours must be at the 500 level.

The thesis option requires satisfactory completion of thirty hours of graduate credit. This includes nine hours in structured agribusiness economics courses; ABE 500, ABE 571, and ABE 572. Fifteen hours of elective graduate credit are selected based upon recommendation from the agribusiness faculty member directing the student's thesis work. A research component including six hours of ABE 599 and an oral examination is required. This option is preferred for individuals with Ph.D. aspirations at SIUC or other institutions.

The non-thesis option requires satisfactory completion of thirty hours of graduate credit. This includes nine hours in structured agribusiness economics courses; ABE 500, ABE 571, and ABE 572. Twenty-one hours of elective graduate credit are selected based upon recommendation from the agribusiness faculty member acting as the student's research paper advisor. Six of these hours must be at the 500 level, including a research component of three hours of ABE 593 and an oral presentation of the student's research paper. This option is preferred for individuals seeking a career in the public sector or with private industry. With proper course selection and timely research component development a student could complete the non-thesis option in one year's time.

Agricultural Services Concentration

The agricultural services concentration is designed to permit individuals who are professionals in private industry or public service to earn a Master of Science degree with a major in agribusiness economics while remaining fully employed in the agricultural sector.

Other individuals may be admitted after request and consideration by the ABE graduate committee and approval of the graduate director.

The agricultural services concentration requires satisfactory completion of thirty hours of graduate credit. Fifteen hours must be at the 500 level and 15 hours must be in Agribusiness Economics or related disciplines, of which three hours must be ABE 593 where a student initiated research paper or special project will be completed under the direction of a faculty advisor.

Accelerated (4 year +1) joint BS - MS Degree

The "4 year +1" program allows motivated and high achieving students to complete a program leading to an undergraduate Bachelor of Science degree and a Master of Science degree with a major in Agribusiness Economics in five years. As early as sophomore year, junior year for transfer students, a student working with a faculty advisor will develop a program of study consistent with the student's interest and goals. To complete this five year plan 141 credit hours is required. Nine credit hours are double counted toward an undergraduate and a Master's degree. Twenty-one hours are taken after undergraduate graduation.

The option requires satisfactory completion of nine hours in structured agribusiness economics courses: ABE 500, ABE 571 (or 471 if taken at the undergraduate level), and ABE 572

(or 472). Twenty-one hours of elective graduate credit, which may include ABE credit hours at the 400-level taken as an undergraduate, are selected based upon recommendation of a faculty advisor. Six of these hours must be at the 500-level. As with the traditional ABE Master's program, ABE 593 Individual Research is required as students complete a research project during the fifth year of study. It is expected that working with a faculty advisor the student will begin development of the research project during the undergraduate senior year. A service component, ABE 591, taken during the fifth year entails working in an unpaid research assistantship capacity, or upon petition to the graduate director, an unpaid research assistant.

This option is preferred for individuals that recognize the value in an advanced degree as the degree may lead to higher entry positions in their chosen career path, more responsibilities, and greater life-long earning potential. An associate benefit of the "4 year +1" program to students that have advanced degree aspirations is the ability to save money by completing their studies quicker.

M.B.A./M.S. in Agribusiness Economics Concurrent Degree Program

The Department of Agribusiness Economics (ABE) and the College of Business together offer an M.B.A./ABE M.S., a concurrent degree program leading to both the Master of Business Administration and the Master of Science with a major in agribusiness economics. The separate M.B.A. degree requires completion of 32 semester hours of coursework; the M.S. with a major in ABE requires the completion of 30 semester hours (thesis option) or 30 hours (non-thesis option). In the concurrent M.B.A./M.S. degree program, the College of Business accepts six semester hours of ABE approved coursework, and ABE accepts six semester hours of College of Business approved coursework. The end result is that the concurrent degree requires completion of 26 semester hours of College of Business approved courses and 24 semester hours of ABE approved courses (thesis option) or 30 semester hours of ABE approved courses including a minimum of 6 semester hours of ABE courses at the 400 level (non-thesis option), or a decrease of 12 semester hours from pursuing both degrees separately.

The ABE M.S. as a part of this option requires satisfactory completion of ABE 500, 571, 572 and additional elective hours. A research component of a thesis (thesis option) or research paper (non-thesis option) as specified for the Agribusiness Economics Concentration must be completed for award of the ABE M.S. degree.

Students interested in enrolling in the concurrent M.B.A./ABE M.S. degree program must apply to and be accepted by both the graduate programs in the ABE Department and the College of Business. The student then may request permission to pursue the concurrent degree. Students enrolled in either the M.B.A. or ABE M.S. may subsequently seek permission to pursue the concurrent degree. Admission to the concurrent degree must be completed at least one semester before the last semester of registration at SIU. The student must complete the requirements of the concurrent degree program to receive both the M.B.A. and ABE M.S. If the student elects, after acceptance into the concurrent degree program, to pursue either, but not

both, the M.B.A. or ABE M.S., all requirements of the individual degree program must be satisfied.

Courses (ABE)

Field trips are required for certain courses.

401-3 Agricultural Law. Relations of common-law principles and statutory law to land tenure, farm tenancy, farm labor, farm management, taxation and other problems involving agriculture. Restricted to junior standing or consent of instructor.

402-1 to 6 Problems in Agribusiness Economics. Designed to improve the techniques of agribusiness economics workers through discussion, assignment, and special workshops on problems related to their field. Emphasis will be placed on new innovative and currently developed techniques for the field. Special approval needed from the chair.

405-3 Management of Ethanol Production Facilities. This course is offered in cooperation with the National Corn-to-Ethanol Laboratory and provides a comprehensive introduction to the management and operation of an ethanol facility as well as overview of today's bio-fuels industry. Topics include: ethanol industry trends and bio-fuels future, corn-to-ethanol production processes, operations control and management, products and co-products, and environmental topics.

419-3 Entrepreneurship in Agribusiness. Students will understand the importance of entrepreneurs to the food, agriculture, and rural economies; learn characteristics common to successful entrepreneurs; prepare a business plan; use information resources to support a business plan; and become proficient in developing professional reports using information technology software. Prerequisite: ABE 350 or 351 or 360.

440-3 Natural and Environmental Resource Economics and Policy. Student will study the application of socioeconomic principles to problems related to natural and environmental resources. The course covers the policy context within which policies related to natural and environmental resources are developed and implemented as well as the range of policy tools available for addressing environmental/natural resource problems. The institutional setting for dealing with natural and environmental resources is presented along with the role of property rights and entitlements. Contemporary resource problems are used as examples. Prerequisite: six hours of agribusiness economics, economics, or geography; graduate status; or consent of instructor.

442-3 Energy Economics and Policy. Economic principles and methods are used to examine economic and policy issues relevant to energy production and use. Topics include: key aspects of energy supply, demand, markets, and regulation; environmental externalities of fuel production and use; the relationships among energy use, economic growth and the environment; alternative energy sources. Prerequisite: 6 hours of agribusiness or general economics, geography, or consent of instructor.

444-3 Agricultural Development. Students are introduced to economic growth and development theory at an intermediate level. Topics include trends in development in North America and study of theories. The economic theories covered address how growth occurs in developed economies including classical and neoclassical, central place and endogenous growth theories among others. Prerequisite: 6 hours of agribusiness or general

economics, geography, or consent of instructor.

445-3 Methods of Regional Economic Analysis. Students are introduced to regional economic methods at an intermediate level. Students will learn concepts and tools commonly used in regional and community economic analysis. Students will learn to use regional input-output analysis and more technical regional economic models designed to capture spatial economic variables. Prerequisites: ABE 444 or consent of instructor.

450-3 Advanced Farm Management. Application of production economic principles and modern decision-making techniques to farm management problems. The importance of information, sources of agricultural risk and management of risk in farm planning will be integrated. Prerequisite: ABE 350 or equivalent and University Core Curriculum mathematics required.

451-3 Appraisal of Rural Property. Principles and practices of rural and farm appraisal. Applications of sales comparison, income capitalization and cost approaches for estimating market value. Consequences of environmental liabilities and regulations on appraisal practices. Understanding of special valuation methods for buildings, insurance, assessments, loans and condemnations. Field trips not to exceed \$10. Prerequisite: 350 or consent of instructor.

452-3 Advanced Agricultural Financial Management. Focus is on using the financial accounting system recommended by the Farm Financial Standards Council as a base for evaluating the financial performance of farms and agribusinesses. Ratio analysis and DuPont Modeling emphasized. Additional focus on credit markets serving farms and agribusinesses with an emphasis on the Farm Credit System and its affiliated Agricultural Credit Associations. Prerequisite: ABE 351.

453-3 Agribusiness Planning Techniques. Application of mathematical programming to agribusiness and farm planning, including enterprise selection, resource allocation, least cost ration formulation, decision making under risk and uncertainty, transportation and location problems. Emphasis placed on modeling problems and interpretation of results. Restricted to junior standing or consent of instructor.

460-3 Agricultural Price Analysis and Forecasting. The focus is on the measurement and interpretation of factors affecting agricultural prices. Methods to analyze the seasonal, cyclical, and trend components of commodity prices are presented. Formal forecasting techniques, including an introduction to statistical and regression methods, are used and explained. Emphasis is placed on the presentation, communication, and evaluation of forecasts in a business environment. Students are given an opportunity to perform applied analysis and present the results. Prerequisite: 318, 362 or equivalent.

461-3 Agriculture Business Management. Examination of agribusiness firm management with emphasis on the management and control of financial resources and the interrelationship between the agribusiness firm and human resource management. Other topics in agribusiness will include effective communication in the management process, business ethics and workable credit programs for customers. Prerequisite: 351 and 360 or equivalent.

462-3 Advanced Agricultural Marketing. Advanced treatment of marketing issues from both theoretical and practical decision-making perspectives. Marketing margins, intertemporal and spatial price relationships are reviewed in detail. Historical and current grain and livestock price series are utilized in decision-

making exercises. Prerequisite: 362 or equivalent.

463-3 Managerial Strategies for Agribusiness. Application of Industrial Organization and Strategic Management (Competitive Strategy) principles to address economic and managerial issues related to agriculture and food industries. Particular emphasis on applying those principles to explain structural changes taking place in the agriculture and food supply chain in the United States. Prerequisite: 204, 350 or 360, Economics 240.

471-3 Resource Allocation in the Agribusiness Firm. An examination of resource allocation in the agribusiness firm. Production decisions, agricultural product price analysis and decision making models are considered. Student cannot receive credit for ABE 471 if credit has been received for ABE 571. Prerequisite: six hours of agricultural economics or economics. Special approval needed from the instructor.

472-3 Problems and Policies of the Agricultural Sector. An analytical survey of agricultural policy issues including agricultural price and income stabilization; international trade, capital and credit, the structure of agriculture and the quality of life in rural areas. Student cannot receive credit for ABE 472 if credit has been received for ABE 572. Prerequisite: six hours of agricultural economics or economics or instructor approval.

500-3 Agribusiness Economics Research Methodology. Research methodology as used in agriculture, including research problem definition, hypothesis formation, research design specification and development of research proposals. Both survey methodology and applied techniques, i.e. multiple regression and time series models, for developing and evaluating agricultural economic models are investigated.

502-3 Environmental Decision Making. (Same as ERP 502) The objective of the course is twofold. The first part of the class will be devoted to case studies of environment decision making which use a variety of approaches to environmental policy. Topics to be covered include market-based environmental management versus regulatory approaches, climate change, conservation and floodplain management policy. The second part of the class will focus on the challenges of interdisciplinary communication and collaboration, methodological research issues and the role of integrated modeling. We will consider different issues such as qualitative and quantitative evidence, validation, and the role of values and objectivity in the scientific process.

544-3 Agricultural Development. Students are introduced to economic growth and development theory at an intermediate level. Topics include trends in development in North America and study of theories. The economic theories covered address how growth occurs in developed economies including classical and neoclassical, central place and endogenous growth theories among others. Prerequisites: 6 hours of agribusiness or general economics, geography, or consent of instructor.

545-3 Methods of Regional Economic Analysis. Students are introduced to regional economic methods at an intermediate level. Students will learn concepts and tools commonly used in regional and community economic analysis. Students will learn to use regional input-output analysis and more technical regional economic models designed to capture spatial economic variables. Prerequisites: ABE 444 or consent of instructor.

571-3 Resource Allocation in the Agribusiness Firm. An examination of resource allocation in the agribusiness firm. Production decisions, agricultural product price analysis and

decision making models are considered. Student cannot receive credit for ABE 571 if credit has been received for ABE 471. Prerequisite: six hours of agricultural economics or economics. Special approval needed from the instructor.

572-3 Problems and Policies of the Agricultural Sector.

An analytical survey of agricultural policy issues including agricultural price and income stabilization; international trade, capital and credit, the structure of agriculture and the quality of life in rural areas. Student cannot receive credit for ABE 572 if credit has been received for ABE 472. Prerequisite: six hours of agricultural economics or economics. Special approval needed from the instructor.

581-1 to 4 Seminar in Agribusiness Economics. Seminar on current research and issues in agribusiness economics on topics such as farm management, farm policy, agricultural marketing, farm finance, agricultural prices and international agriculture.

585-1 to 6 Practicum/Internship. Supervised work experience at the graduate level with a public or private agency or firm through which a graduate student can acquire practical professional training to complement their academic course work and research.

588-1 to 8 International Graduate Studies. University residential graduate study program abroad. Prior approval by the department is required both for the nature of program and the number of semester hours of credit.

590-1 to 4 Readings. Readings in specialized topics under the direction of an approved graduate faculty member. Graded *S/U* only.

591-3 Experiential Learning. A research/teaching experiential learning course designed to allow the student to gain practical research development, classroom management and/or mentoring experience under the guidance of an assigned faculty member. A typical experience may include such activities as assisting a faculty member with class project design and management, assisting in research proposal development, or participating as a mentor in the College of Agricultural Sciences 121 (Ideas to Investigation) initiative.

593-1 to 4 Individual Research. Directed research in selected topics under the supervision of an approved graduate faculty member. Graded *S/U* only.

599-1 to 6 Thesis. Work in the research for and presentation of a thesis under the supervision of an approved faculty member. Graded *S/U* only.

601-1 (per semester) Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Agricultural Sciences

www.coas.siu.edu/

kezo@siu.edu

COLLEGE OF AGRICULTURAL SCIENCES

Graduate Faculty:

AbuGhazaleh, Amer A., Professor, Ph.D., South Dakota State University, 2002; 2004.

Akamani, Kofi, Assistant Professor, Ph.D., University of Idaho, 2011; 2015.

Altman, Ira J., Associate Professor and *Chair*, Ph.D., University of Missouri, 2005; 2006.

Apgar, Gary A., Associate Professor, Ph.D., Virginia Polytechnic Institute and State University, 1994; 1998.

Arthur, Robert, Professor, *Emeritus*, Ph.D., University of Missouri, 1970; 1977.

Ashraf, Hea-Ran L., Professor, *Emerita*, Ph.D., Iowa State University, 1979; 1980.

Asirvatham, Jebaraj, Assistant Professor, Ph.D., University of Illinois, 2011; 2015.

Atkinson, Rebecca L., Associate Professor, Ph.D., University of Wyoming, 2006; 2006.

Banz, William J., Professor and *Chair*, Ph.D., University of Tennessee, 1995; 1995.

Beaulieu, Jeffrey R., Associate Professor, *Emeritus*, Ph.D., Iowa State University, 1984; 1983.

Beck, Roger J., Associate Professor, *Emeritus*, Ph.D., Pennsylvania State University, 1977; 1984.

Bond, Jason P., Professor, Ph.D., Louisiana State University, 1999; 2000.

Carver, Andrew, Professor, Ph.D., Purdue University, 1998; 1998.

Choudhary, Ruplal, Associate Professor, Ph.D., Oklahoma State University, 2009; 2009.

Chong, She-Kong, Professor, *Emeritus*, Ph.D., University of Hawaii, 1979; 1979.

Cook, Rachel, Assistant Professor, University of North Carolina, 2012.

Davis, Jeremy, Associate Professor, Ph.D., Iowa State, 2008; 2008.

Diesburg, Kenneth L., Assistant Professor, *Emeritus*, Ph.D., Iowa State University, 1987; 1989.

Eberle, Phillip R., Associate Professor, *Emeritus*, Ph.D., Iowa State University, 1983; 1983.

Endres, Jeannette M., Professor, *Emerita*, Ph.D., St. Louis University, 1972; 1980.

Fakhoury, Ahmad M., Associate Professor, Ph.D., Purdue University, 2001; 2003.

Gastal, Eduardo L., Associate Professor, Ph.D., University of Wisconsin-Madison, 1999; 2009.

Groninger, John W., Professor, Ph.D., Virginia Polytechnic Institute and State University, 1995; 1997.

Harris, Kim S., Associate Professor, *Emeritus*, Ph.D., University of Illinois, 1985; 1984.

Hausler, Carl L., Associate Professor, *Emeritus*, Ph.D., Purdue University, 1970; 1970.

Henry, Paul H., Associate Professor, Ph.D., North Carolina State University, 1991; 1992.

Holzmueller, Eric J., Associate Professor, Ph.D., University of Florida, 2006; 2007.

Jones, Karen L., Professor and *Chair*, Ph.D., Texas A&M, 1999; 1999. Animal biotechnology.

Kammlade, W. G., Jr., Associate Professor, *Emeritus*, Ph.D., University of Illinois, 1951; 1954.

Kantartzi, Stella, Associate Professor, Ph.D., Aristotle University of Thessaloniki, 2006; 2008. Soybean breeding and genetics.

King, Sheryl S., Professor, *Emerita*, Ph.D., University of California, Davis, 1983; 1983.

Klubek, Brian P., Professor, *Emeritus*, Utah State University, 1977; 1978.

Kraft, Steven E., Professor, *Emeritus*, Ph.D., Cornell University, 1976; 1980.

Kroening, Gilbert H., Professor, *Emeritus*, Ph.D., Cornell University, 1965; 1969.

Latour, Mickey, Professor and *Dean*, Ph.D. Mississippi State University.

Legacy, James, Professor, *Emeritus*, Ph.D., Cornell University, 1976; 1977.

Lightfoot, David A., Professor, Ph.D., University of Leeds, 1984; 1991.

Long, Sara, Professor, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1991; 1991.

McGuire, James M., Professor, *Emeritus*, Ph.D., North Carolina State University, 1961; 1993.

Meksem, Khalid, Professor, Ph.D., University of Cologne, Germany, 1995; 2000.

Midden, Karen L., Professor and *Associate Dean*, M.L.A., University of Georgia, 1983; 1988. Landscape design.

Minish, Gary L., Professor, *Emeritus*, Ph.D., Michigan State University, 1966; 2004.

Moon, Wanki, Professor, Ph.D., University of Florida, 1995; 2000.

Nielsen, Clayton, Professor, Ph.D., Southern Illinois University Carbondale, 2001; 2009.

Olsen, Farrel J., Professor, *Emeritus*, Ph.D., Rutgers University, 1961; 1971.

Park, Logan, Associate Professor, Ph.D., Virginia Polytechnic Institute and State University, 2009; 2009.

Pense, Seburn L., Associate Professor, Ph.D., Oklahoma State University, 2002; 2003.

Preece, John E., Professor, *Emeritus* Ph.D., University of Minnesota, 1980; 1980.

Rendleman, C. Matthew, Associate Professor, Ph.D., Purdue University, 1989; 1994.

Ruffner, Charles M., Professor, Ph.D., Pennsylvania State University, 1999; 1999.

Sanders, Dwight R., Professor, Ph.D., University of Illinois, 1999; 2000.

Schmidt, Michael, Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1994; 1979.

Schoonover, Jon E., Associate Professor, Ph.D., Auburn University, 2005; 2006.

Secchi, Silvia, Associate Professor, Ph.D., Iowa State, 2000; 2008.

Shoup, W. David, Professor, *Emeritus*, Ph.D., Purdue University, 1980; 1999.

Smith, Sylvia F., Associate Professor, Ph.D., University of Tennessee, 2007; 2007.

Stucky, Donald J., Professor, *Emeritus*, Ph.D., Purdue University, 1963; 1970.

Taylor, Bradley H., Associate Professor, Ph.D., Ohio State University, 1982; 1982.

Tweedy, James A., Professor, *Emeritus*, Ph.D., Michigan State University, 1966; 1966.

Varsa, Edward C., Professor, *Emeritus*, Ph.D., Michigan State University, 1970; 1970.

Venable, Erin R., Assistant Professor, Ph.D., University of Missouri-Colombia, 2010.

Walters, S. Alan, Professor, Ph.D., North Carolina State University, 1997, 1998.

Watson, Dennis, Associate Professor, Ph.D., Michigan State University, 1987; 2002.

Welch, Patricia, Professor, *Emerita*, Ph.D., Southern Illinois University, 1982; 1982.

Williard, Karl W. J., Professor, Ph.D., Pennsylvania State University, 1999; 1999.

Wolff, Robert L., Professor, *Emeritus*, Ph.D., Louisiana State University, 1971; 1972.

Young, Anthony W., Professor, *Emeritus*, Ph.D., University of Kentucky, 1969; 1980.

Zaczek, James J., Professor and *Chair*, Ph.D., Pennsylvania State University, 1994; 1997.

Doctor of Philosophy in Agricultural Sciences

The College of Agricultural Sciences offers a graduate program leading to the Doctor of Philosophy degree. This degree is designed to provide students with an interdisciplinary doctoral education in the physical, biological and social sciences that enhances, regulates and sustains agriculture, food and forestry producers, industries and agencies. This degree will prepare Ph.D. graduates to teach and conduct research and outreach at universities and community colleges, and for careers in the corporate, private and government sectors.

Admission

All applications to the program must include a Graduate School On-Line Application available at gradschool.siu.edu, a statement of interest, college transcripts, three letters of recommendation, GRE scores including verbal and quantitative, and may include a financial assistance form. In addition, this Program requires a non-refundable \$65.00 application fee. Criteria for admission include an official transcript, letters of recommendation, grade point average (must meet the SIU Graduate School minimum 3.25 GPA in graduate work), and GRE scores. The Graduate Committee of the College must approve admission to the Ph.D. in Agricultural Sciences program. Ph.D. students will be selected on a national and international competitive basis.

Students may be admitted to the doctoral program with a Bachelor's, a Master of Science or a Master of Arts degree in Agriculture, a discipline within the SIUC College of Agriculture Sciences, or a closely related field (such as Biology, Botany, Natural Science, Rural Sociology, Economics, or Environmental Science). Upon nomination of the master's committee and upon approval by the College of Agricultural Sciences doctoral program committee. Exceptional M.S. students may be allowed accelerated entry to the Ph.D.

Students admitted under direct or accelerated entry to the Ph.D. program are subject to all existing requirements for the doctoral degree; the admission/advisory committee for the student may add extra requirements based on the student's background.

Doctor of Philosophy Degree Program

Each doctoral student in the College of Agricultural Sciences must successfully complete a common core of research methodology courses, including a two semester sequence of graduate level statistics courses for 4-5 credit hours each, followed by a 3-4 credit hour graduate level experimental design course. Students also will be required to take a three-credit course in Research and Teaching Communications, two semesters of graduate seminar, and 24 hours of dissertation credits. There will be an additional minimum of 20 hours of structured courses appropriate for each student's area of emphasis. The student's graduate advisory committee must approve these courses. Emphasis areas include Agricultural Economics, Agricultural Systems Technology, Agricultural Education, Animal Science, Crop Science and Environmental Management, Food and Nutrition, Forestry, and Horticulture.

All Ph.D. students in the program will be required to teach or assist in teaching at least two courses within the College of Agricultural Sciences while in the program. This requirement is regardless of the form of stipend of the student, i.e. if a student is on a research assistantship throughout their tenure in the program, they will still be required to teach or assist in teaching courses.

There is no minimal credit-hour requirement beyond the core, the area of emphasis, and the Graduate School's residency and dissertation requirements. A student in consultation with their major professor will prepare a program of study, including courses in the student's area of emphasis, by the end of the second semester of residency. This plan of study, when approved by the student's advisory committee, will be filed with the Director of Graduate Studies for the College.

Ph.D. Candidacy

By the end of the second semester in residence, students must have chosen an area of emphasis and formed a graduate advisory committee to approve their coursework and oversee their dissertation research. The graduate advisory committee will consist of at least five graduate faculty members, with the majority from within the College of Agricultural Sciences and no more than three members from one department. The committee chair will be the student's major professor and must be a member of the College of Agricultural Sciences faculty.

To be admitted to candidacy, the student must have completed the Graduate School's 24 credit hours residency requirement within four calendar years, plus the core and emphasis area coursework that was approved by their graduate advisory committee. This should take the student three to four semesters, depending on whether they had any graduate-level research methodology courses during their Master's degree. At this time, they will take both written and oral preliminary examinations designed and administered by the student's graduate advisory committee. These exams will each have two parts. One will focus on the student's knowledge of the research methodology core and the second part will focus on the student's

chosen area of emphasis. If the preliminary examinations are not passed, a student must wait a minimum of three months for the second and final attempt to pass the exam.

After passing the written and oral preliminary exams and with an approved dissertation proposal, the student will be admitted to candidacy. The Graduate School requires that Ph.D. students fulfill all degree requirements within five years of admission to candidacy or they may have to retake their preliminary exams.

Dissertation and Dissertation Examination

By the beginning of the fifth semester of residence, the students will present to their graduate committee a dissertation research proposal. The student's committee must approve the proposal by the end of their fifth semester of residence. At this time, students must present their dissertation proposal verbally in the form of a graduate seminar. All faculty members in the College of Agricultural Sciences, the student's graduate advisory committee, all other graduate students in the College, and appropriate individuals from industry groups in southern Illinois will be invited to these seminars. Following the seminar, the student will meet with their graduate advisory committee and will be asked to defend the substance and methods of the proposed research.

The student's graduate advisory committee will monitor the student's progress on the dissertation. When the dissertation is completed to the satisfaction of the graduate advisory committee, the committee will administer a final oral exam that will focus on defense of the dissertation. When the dissertation and final oral exam are successfully completed, the student will be recommended to the Graduate School for the doctoral degree.

Courses (AGSC)

550-3 Research and Teaching Communications. This course is designed to teach graduate students how to communicate successfully their proposed and completed research and to teach college-level courses in the Agricultural Sciences.

581-1 to 4 (1,1,1) Seminar. Oral presentations by individual graduate students. Each Ph.D. student in Agricultural Sciences is required to present their proposed dissertation research project as a seminar and the findings of their dissertation as a seminar. All Agricultural Sciences Ph.D. students must register for at least two credits of seminar.

582-A-C (1-3, 1-3, 1-3) Colloquium in Agricultural Science. Recent developments in Agricultural Sciences will be discussed in a classroom setting; (a) Biological Science, (b) Social Sciences, and (c) Physical Sciences.

590-1 to 4 Graduate Readings in Agricultural Science. Journal articles, chapters and books relevant to a Ph.D. student's research will be read and discussed with their major professor.

591-1 to 4 Individual Research in Agricultural Science. Directed research in approved specialized topic areas in Agricultural Sciences.

592-1 to 4 Special Problems in Agricultural Science. Directed study of specialized areas of Agricultural Science, depending on the program of the student.

595-1 to 6 Instruction in Agricultural Sciences. Acquaints the student with different teaching environments and styles. Students will be expected to participate in instructing

agricultural sciences courses. Special approval needed by the instructor.

600-1 to 36 (1 to 12 per semester) Dissertation. This course is to be taken during the research and writing of the dissertation. A minimum of 24 hours must be earned for the Doctor of Philosophy degree.

601-1 Continuing Enrollment. For those Doctoral students who have not finished their degree programs and who are in the process of working on their dissertation. The student must have completed a minimum of 24 hours of dissertation research before being eligible to register for this course. Concurrent enrollment in any course is not permitted.

The following is a list of structured courses from which Ph.D. students in Agricultural Sciences may select in each of the emphasis areas. Students will not be limited to these courses, however, the majority of the courses that they may take are included.

Common Among Disciplines

QUAN 506-4	Inferential Statistics
QUAN 507-4	Multiple Regression
QUAN 508-4	Experimental Design in Educational Research
PSAS 560-5	Field Plot Technique
ZOOL 557-4	Biostatistics
ZOOL 558-4	Advanced Biostatistics

Agribusiness Economics

ABE 401-3	Agricultural Law
ABE 402-1 to 6	Problems in Agribusiness Economics
ABE 440-3	Natural and Environmental Resource Economics and Policy
ABE 444-3	Agricultural Development
ABE 450-3	Advanced Farm Management
ABE 451-3	Appraisal of Rural Property
ABE 453-3	Agribusiness Planning Techniques
ABE 460-3	Agricultural Price Analysis and Forecasting
ABE 461-3	Agriculture Business Management
ABE 462-3	Advanced Agricultural Marketing
ABE 463-3	Managerial Strategies for Agribusiness
ABE 500A,B-6(3,3)	Agribusiness Economics Research Methodology
ABE 551-3	Resource Allocation in the Agribusiness Firm
ABE 552-3	Problems and Policies of the Agricultural Sector
ABE 581-1 to 4	Seminar in Agribusiness Economics
ABE 585-1 to 6	Practicum/Internship
BA 505	Brand Management
BA 510	Managerial Accounting & Control Concepts
BA 514	Ethics of Business
BA 530	Financial Management
BA 531	Advanced Financial Management
BA 532	Financial Institutions and Markets
BA 533	Investment Concepts
BA 540	Managerial and Organization Behavior
BA 541	Operations Research II
BA 544	Advanced Production Planning and

BA 545D	Inventory Management	GEOG 436-3	Environmental Disaster Planning
BA 550	Advances in Strategic Management	GEOG 438-3	Applied Meteorology
BA 551	Marketing Management	GEOG 439-3	Climatic Change
BA 558	Product Strategy and Management	GEOG 458-3	Analysis of Risk and Bioterrorism Using GIS
BA 560	Promotional Strategy and Management	GEOG 471-3	Environmental Impact Analysis
BA 561	Management of Information Systems	<u>Agricultural Operations and Systems</u>	
BA 562	Database Design and Applications	PSAS 461-3	Programming for Agricultural Systems
BA 564	Information Systems and Design	PSAS 472-3	Precision Agriculture
BA 564	Management of Marketing Information	PSAS 473-3	Agricultural Automation
BA 580	International Dimensions of Business and Management	PSAS 476-3	Agricultural Safety and Health
BA 581	Global Marketing	PSAS 483-3	Agricultural Processing Systems
BA 582	International Finance	PSAS 497-2	Agricultural Operations Management
BA 583	Global Operations Management	PSAS 560-5	Field Plot Technique
BA 584	Global Business Strategies	PSAS 572-3	Current Research in Agricultural Systems
ECON 429-3	International Trade and Finance	PSAS 575-3	Agricultural Systems
ECON 431-3	Public Finance II	<u>Forestry</u>	
ECON 436-3	Government and Labor	FOR 401-3	Fundamentals of Environmental Education
ECON 440-3	Price, Output and Allocation Theories	FOR 402-3	Wildland Hydrology
ECON 441-3	Contemporary Macroeconomic Theory	FOR 403-3	Agroforestry
ECON 463-3	Introduction to Applied Econometrics	FOR 405-2	Forest Management for Wildlife
ECON 474-3	Antitrust and Regulation	FOR 408-4	Introduction to Remote Sensing and GIS
ECON 520-6 (3,3)	Economic Development Theory and Policy	FOR 409-3	Forest Resources Decision-Making
ECON 522-3	Microeconomic Foundations of Labor Markets	FOR 410-3	Forest Resources Administration and Policy
ECON 530-3	Foreign Trade	FOR 411-3	Forest Resources Economics
ECON 531-3	International Finance	FOR 412-2	Tree Improvement
ECON 532-3	Economics of Human Resources	FOR 414-3	Information Management
ECON 534-3	Economics of Taxation	FOR 416-3	Forest Resource Management
ECON 540A-3	Microeconomic Theory I	FOR 417-2	Forest Land-Use Planning
ECON 540B-3	Microeconomic Theory II	FOR 418-2	Marketing of Forest Products
ECON 540C-3	Microeconomic Theory III	FOR 420-3	Park and Wildlands Management
ECON 541A-3	Macroeconomic Theory I	FOR 421-3	Recreation Land-Use Planning
ECON 541B-3	Macroeconomic Theory II	FOR 422C-4	Park and Wildlands Management Camp
ECON 541C-3	Macroeconomic Theory III	FOR 423-3	Environmental Interpretation
ECON 545-3	Resource Economics	FOR 428-2	Community Forestry
ECON 567A-3	Econometrics I	FOR 429-3	Watershed Management Field Laboratory
ECON 567B-3	Econometrics II	FOR 430-3	Wildland Watershed Management
ECON 567C-3	Econometrics III	FOR 431-3	Regional Silviculture
ECON 580A-3	Performance Measurement	FOR 451-2	Natural Resources Inventory
GEOG 401-3	Introduction to Geographic Information Systems	FOR 452-2	Forest Soils
GEOG 406-3	Introduction to Remote Sensing	FOR 452L-2	Forest Soils Laboratory
GEOG 408-3	Advanced Remote Sensing	FOR 453-2	Environmental Impact Assessment in Forestry
GEOG 420-3	Advanced Geographic Information Systems (GIS) Studies	FOR 454-2-8	Forest Ecology Field Studies
GEOG 422-4	Economics in Environmental Management	FOR 460-2	Forest Industries
GEOG 424-4	Natural Resources Planning	FOR 470-2	Wilderness Management, Policy, and Ethics
GEOG 425-4	Integrated Water Management	FOR 480-3	Natural Resource Advocacy
GEOG 426-4	Administration of Environmental Quality and Natural Resources	FOR 485-3	Social Influences on Forestry
GEOG 428-3	Spatial Decision Support Systems	FOR 500-2	Principles of Research
GEOG 429-3	Geography and Organic Farming	FOR 502-3	Advanced Watershed Hydrology and Management
GEOG 430-3	Environmental Systems Analysis	FOR 504-2	Tree Physiology Concepts and Applications
GEOG 431-3	Climate	FOR 508-2	Historical Ecology
GEOG 433-4	Field Methods in Weather and Water Resources	FOR 510-2	Advanced Silviculture
GEOG 434-4	Water Resources Hydrology	FOR 511-2	Advanced Forest Resources Economics
GEOG 435-3	Energy Planning	FOR 512-2	Tree Selection and Breeding
		FOR 516-2	Advanced Forest Management
		FOR 520-2	Advanced Park Planning

FOR 521-2	Recreation Behavior in Wildlands Environments
FOR 523-2	Advanced Resource Interpretation
FOR 530-2	Forest Site Evaluation
FOR 531-2	Disturbance Ecology
FOR 585-3	Human Dimensions of Natural Resource Management
SOC 544 (3)	Sociology of Gender
SOC 555 (3)	Social Movements and Collective Action
SOC 514 (4)	Qualitative Research Methods
POLS 446 (3)	Museum Administration
POLS 549 (3)	Administration of Nonprofit Organizations
PSYC 529 (3)	Structural Equation Modeling with LISREL
PSYC 563 (3)	Research in Attitude and Persuasion
REC 500 (3)	Modern Concepts of Leisure

Human and Animal Systems

ANS 409-4	Equine Science
ANS 415-4	Advanced Animal Nutrition
ANS 419-4	Stable Management
ANS 421-2	International Animal Production
ANS 430-4	Dairy Cattle Management
ANS 431-4	Reproductive Physiology
ANS 433-4	Introduction to Agricultural Biotechnology
ANS 434-4	Physiology of Lactation
ANS 455-2	Animal Waste Management
ANS 465-4	Swine Management
ANS 485-4	Beef Cattle Management
ANS 500-3	Research Methods in Agricultural Sciences
ANS 506-3	Instrumentation M in Agricultural Science
ANS 515-3	Energy and Protein Utilization
ANS 516-3	Minerals and Vitamins in Animal Nutrition
ANS 531A-2	Advanced Reproductive Physiology
ANS 531B-2	Developmental Physiology
ANS 531C-2	Endocrine Physiology
HND410-3	Nutrition Education
HND 420-3	Recent Developments in Nutrition
HND 425-3	Biochemical Aspects in Nutrition
HND 470-4	Medical Nutrition
HND 475-3	Nutrition Through the Life Cycle
HND 480-3	Community Nutrition
HND 485-3	Advanced Nutrition
HTA 445-3	Sustainable Tourism and Development
HTA 451-3	Destination Management
HTA 460-4	Food Service Management
HTA 461-3	Service Organization and Management
HTA 465-3	Convention Management and Services
HTA 473-3	Hotel Administration

Plant Systems

PSAS 401-2	Agricultural Plant Pathology
PSAS 403A-2	Field Crop Diseases
PSAS 403B-2	Horticultural Crop Diseases
PSAS 403C-2	Turfgrass Diseases
PSAS 405-3	Plant Breeding
PSAS 408-3	World Crop Production Problems
PSAS 409-3	Crop Physiology and Ecology
PSAS 419-3	Forage Crop Management
PSAS 420-4	Crop Pest Control
PSAS 422-3	Turfgrass Science
PSAS 432-3	Greenhouse Management

PSAS 424-4	Floriculture
PSAS 425A-5	Advanced Plant Pathology (same as PLB 425a)
PSAS 425B-5	Advanced Plant Pathology (same as PLB 425B)
PSAS 426-4	Genomic and Bioinformatics
PSAS 428-3	Advanced Landscape Design I
PSAS 429-3	Advanced Landscape Design II
PSAS 430-4	Plant Propagation
PSAS 432-4	Garden Center and Nursery Management
PSAS 433-4	Introduction to Agricultural Biotechnology (same as PLB 433)
PSAS 434-3	Woody Plant Maintenance
PSAS 436-4	Fruit Production
PSAS 437-4	Vegetable Production
PSAS 441-3	Soil Morphology and Classification
PSAS 442-3	Soil Physics
PSAS 443-3	Soil Management
PSAS 445-3	Irrigation Principles and Practices
PSAS 446-3	Soil and Water Conservation
PSAS 447-3	Fertilizers and Soil Fertility
PSAS 448-2	Soil Fertility Evaluation
PSAS 454-4	Soil Microbiology
PSAS 455-3	Biology of Plant-Microbe Interactions
PSAS 468-3	Weeds – Their Control
PSAS 470-2	Post Harvest Handling of Horticultural

Commodities

PSAS 475-4	Golf Course Green Installation and Maintenance
PSAS 518-3	Principles of Herbicide Action
PSAS 520-3	Plant Growth and Development
PSAS 524-2	Advanced Plant Genetics (same as PLB 524)
PSAS 560-5	Field Plot Technique
PSAS 570-4	Genomics
PSAS 582-6	Colloquium in Plant and Soil Science
PLB 400-4	Plant Anatomy
PLB 405-4	The Fungi
PLB 409-3	Field Mycology
PLB 415-5	Morphology of Vascular Plants
PLB 418-3	Plant Molecular Biology
PLB 420-3	Techniques in Plant Molecular Biology
PLB 421-4	Botanical Microtechnique
PLB 430-3	Economic Botany
PLB 439-2	Natural Areas and Rare and Endangered

Species

PLB 475-3	Advanced Cell Biology
PLB 500-3	Advanced Plant Anatomy
MBMB 421-3	Biotechnology
MBMB 425-3	Biochemistry and Physiology of Microorganisms
MBMB 451A/B-3/3	Biochemistry
MBMB 453-3	Immunology
MBMB 460-3	Genetics of Bacteria and Viruses
MBMB 480A/B-2/2	Molecular Biology of Microorganisms Laboratory
GEOL 470-3	Hydrogeology
GEOL 474-3	Geomorphology
GEOG 434-4	Water Resources Hydrology

Animal Science

<http://coas.siu.edu/academics/masters-degree/animal-science/index.html>

COLLEGE OF AGRICULTURAL SCIENCES

Graduate Faculty:

AbuGhazaleh, Amer A., Professor, Ph.D., South Dakota State University, 2002; 2004. Dairy Nutrition.

Apgar, Gary A., Associate Professor, Ph.D., Virginia Polytechnic Institute, 1994; 1998. Monogastric nutrition, swine production.

Arthur, Robert, Professor, *Emeritus*, Ph.D., University of Missouri, 1970; 1977.

Atkinson, Rebecca L., Associate Professor, Ph.D., University of Wyoming, 2006; 2006. Beef nutrition, forages.

Banz, William J., Professor and *Chair*, Ph.D., University of Tennessee, 1995; 1995. Human nutrition, nutritional physiology.

Davis, Jeremy, Assistant Professor, Ph.D., Iowa State University, 2008; 2009. Human nutrition, nutritional physiology.

Gastal, Eduardo L., Associate Professor, DVM, Federal University of Pelotas, Brazil; Ph.D, University of Wisconsin-Madison, 1985; 1999; 2009. Reproductive physiology.

Goodman, Bill L., Professor, *Emeritus*, Ph.D., Ohio State University, 1959; 1958.

Hausler, Carl L., Associate Professor, *Emeritus*, Ph.D., Purdue University, 1970; 1970.

Jones, Karen L., Professor, Ph.D., Texas A&M, 1999; 1999. Animal biotechnology, genetics reproductive physiology.

King, Sheryl S., Professor, *Emeritus*, Ph.D., University of California, Davis, 1983; 1983. Reproduction physiology, equine science.

Kroening, Gilbert H., Professor, *Emeritus*, Ph.D., Cornell University, 1965; 1969.

Minish, Gary., Professor, *Emeritus*, Ph.D., Michigan State University, 1996; 2004. Beef production and evaluation.

Olson, Howard H., Professor, *Emeritus*, Ph.D., University of Minnesota, 1952; 1954.

Smith, Sylvia, Associate Professor, Ph.D., University of Tennessee, 2007; 2008. Food Service Management/Local Foods.

Venable, Erin, Assistant Professor, Ph.D., University of Missouri, 2010.

Young, Anthony W., Professor, *Emeritus*, Ph.D., University of Kentucky, 1969; 1980.

The Department of Animal Science, Food and Nutrition offers programs of study leading to the Master of Science degree with a major in animal science. Programs may be designed either as thesis or non-thesis in the various disciplines of nutrition, reproductive physiology, biotechnology and/ or growth and development with emphasis on beef cattle, dairy cattle, horses, swine, fish or humans. Other animal or cell culture systems are sometimes used as research models.

Admission to programs administered by the Department of Animal Science, Food and Nutrition must be approved by the Graduate Programs Committee. Application forms are available online at

<http://gradschool.siu.edu/applygrad/index.html>.

Applicants must have the registrar of each college previously attended send official transcripts directly to the Department of Animal Sciences, Food and Nutrition.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Animal Science, Food and Nutrition. Applicants pay this fee by credit card.

Requirements

Minimum requirements for students entering the master's degree program are: (a) a bachelor's degree in Animal Science, Dairy Science, Biological Sciences, or related field; (b) a minimum 3.0 cumulative undergraduate G.P.A. ($A=4.0$); (c) 300 cumulative score; 3.0 analytical writing score on the Graduate Record Exam (GRE); (d) Statement of Research Interests; (e) three letters of recommendation (at least two from undergraduate professors); and (f) TOEFL exam for international students. Students can be admitted with a G.P.A. under 3.0 or for a GRE deficiency on a conditional basis and must enroll in a minimum of seven hours of structured courses at the 400-500 level during their first semester and achieve a *B* or better in each course or be dropped from the program. Undergraduate courses cannot be given graduate credit.

Minimum requirements for the master's degree may be fulfilled by satisfactory completion of 35 semester hours of graduate credit, with a minimum of 20 hours inside animal science, a minimum of 15 hours of 500-level graduate courses, and at least 8 hours outside the College of Agricultural Sciences. A maximum of two animal production related courses (ANS 409, 430, 465, 485) may be counted for graduate credit in the thesis option. Additional University requirements are stated in the SIU Graduate Catalog. Specific required course work includes:

- a. Two semesters of ANS 581 (Seminar)
- b. Two semesters of graduate-level statistics
- c. A minimum of one semester of upper-level biochemistry
- d. Six credit hours of ANS 595

Each student, whether in the thesis or non-thesis option, will be mentored by a member of the Animal Science, Food and Nutrition faculty designated as the major professor. The major professor will serve as the research mentor and academic advisor. A graduate advisory committee will be selected with consultation of the major professor. The committee will consist of no fewer than three graduate faculty members. Two members of the committee must be from the Animal Science, Food and Nutrition faculty, and one of the members of the committee must be from outside the department. The major professor will chair the student's graduate committee.

All candidates in the thesis option are required to conduct original research. All candidates in the non-thesis option cannot take ANS 599 (Thesis) for graduate credit. All students are encouraged to participate in research within the department to provide a broader experience. Each master's degree candidate must pass a comprehensive oral examination covering all graduate work including the thesis or research paper.

Information concerning admission policies, requisites for graduation, and availability of financial assistance for graduate study in animal science may be obtained from the Department

of Animal Science, Food and Nutrition, Southern Illinois University Carbondale, Carbondale, IL 62901-4417; (618) 453-2329. <http://www.coas.siu.edu/>

Courses (ANS)

Field trips are required for certain courses.

409-4 Equine Science. Designed for students interested in the more scientific aspects of equine physiology and management. The class will take a more advanced look at anatomy and physiology of the systems of the equine and consider how they relate to selection, use and management. Lecture and laboratory. Lab fee: \$50. Prerequisite: 219 and 331.

415-4 Advanced Animal Nutrition. Advanced principles and practices associated with digestion, absorption and metabolism of nutrients as related to domestic monogastrics, ruminants and horses. Prerequisite: 215 and 315.

419-4 Stable Management. Designed for the advanced equine student planning a career in the horse field. Mastery of in-depth management techniques on an applied basis is emphasized. Farm, animal and personnel management are practiced. Extensive out-of-class practice time is expected. Prerequisites: ANS 409 with a grade of C or better. Lab fee: \$90.

420-3 Companion Animal Behavior - Animals at Work. This course focuses on the behavior of dogs and horses and will incorporate hands-on training techniques as well as pack/herd observation. Students will understand the difference between classical and operant conditioning, negative and positive reinforcement and will have the opportunity to observe social behavior, reproductive behavior, eating behaviors as well as dominant and submissive behaviors. Key features of the course include a study of the work that dogs and horses perform for man as well as a history of how those working relationships developed. All students with a passion for animals are encouraged to enroll.

421-2 International Animal Production. A study of world animal production practices with emphasis on the developing countries. Adaptability of animals to environmental extremes and management practices employed to improve productivity. Prerequisite: ANS 121. Restricted to junior standing.

425-3 Biochemical Aspects in Nutrition. (Same as HND 425) The interrelationship of cell physiology, metabolism and nutrition as related to energy and nutrient utilization, including host needs and biochemical disorders and diseases requiring specific nutritional considerations. Prerequisite: ANS 215 or HND 320, CHEM 140B, PHSL 201, and 208.

426-3 Comparative Endocrinology. (Same as PHSL 426, ZOOL 426) Comparison of mechanisms influencing hormone release, hormone biosynthesis, and the effects of hormones on target tissues, including mechanisms of transport, receptor kinetics, and signal transduction. Prerequisites: ANS 331 or ZOOL 220 or PHSL 310 with a minimum grade of C.

429-2 Equine Enterprise Management. Study of the diverse horse industry and business management practices involved with the operation of a successful horse enterprise. Analysis of a commercial horse operation will be explored through an in-depth, self-directed farm project. Field trips and guest speakers will inform students for the farm project. An on-campus horse event will be planned and executed as a class project.

Prerequisites: ANS 409, ABE 350 or 351. Field trip fee: \$40.

430-4 Dairy Cattle Management. Application of the principles of breeding, physiology and economics to management of a profitable dairy herd. Breeds of dairy cattle, housing, milking practices and quality milk production. Field trip. Lab/Field Trip Fee: \$35. Prerequisites: ANS 315.

431-4 Reproductive Physiology. Comparative anatomy and physiology of the male and female reproductive system of domestic animals; hormones; reproductive cycles; mating behavior; gestation and parturition; sperm physiology; collection and processing of semen; artificial insemination, pregnancy tests; diseases. Laboratory fee: \$10. Prerequisite: ANS 121, ANS 331.

433-3 to 7 Introduction to Agricultural Biotechnology. (Same as AGSE 433, CSEM 433, HORT 433, PLB 433, PSAS 433) This course will cover the basic principles of plant and animal biotechnology using current examples; gene mapping in breeding, transgenic approaches to improve crop plants and transgenic approaches to improve animals will be considered. Technology transfer from laboratory to marketplace will be considered. An understanding of gene mapping, cloning, transfer and expression will be derived. Restricted to senior standing or consent of instructor.

434-2 Physiology of Lactation. Anatomy and physiology of milk secretion; endocrine control; milk precursors and synthesis; milk composition; physiology and mechanics of milking; lactation-related disorders and diseases; transgenic milk. Prerequisite: ANS 331.

435-1 to 4 Agricultural Molecular Biotechnology Seminar. (Same as CSEM 435) Molecular biology is rapidly making important contributions to agricultural science through biotechnology. An appreciation of the techniques of molecular biology and their application to plant improvement is important to all in agriculture and biology. The relationships between plant molecular biology and the biotechnology industry will be discussed. Presentations on particular research problems will be made. Graded P/F only.

445-4 Companion Animal Clinical Nutrition. Nutrition and feeding management of canine and feline during obesity, cancer, diabetes, urolithiasis, dental disease, dermatological disease, hepatic and gastrointestinal disorders, mobility and muscular disorders, heart diseases, and critical care. Prerequisite: ANS 215 with a grade of C or better.

455-2 Animal Nutrient Management. Scope and problems associated with animal nutrient management; current regulations and law on environmental protection. Principles covering waste management technology and current livestock nutrient management systems are presented. Field trips will be scheduled. Restricted: junior standing.

465-4 Swine Management. Swine production systems and management techniques including breeding and selection, reproduction, nutrition, herd health and disease prevention, housing and waste management, marketing, production costs and enterprise analysis. Field trip. Lab: \$35. Prerequisites: ANS 315 or consent of instructor.

477-3 Aquaculture. (Same as ZOOL 477) Production of food, game and bait fishes. Design of facilities, chemical and biological variables, spawning techniques, diseases and nutrition. Two lectures per week and one four-hour laboratory on alternate

weeks. Prerequisites: BIOL 200A or ZOOL 118 or ANS 121 with a grade of C or better.

485-4 Beef Cattle Management. Beef cattle production systems and management, breeding and selection, reproduction, nutrition, and herd health with emphasis on the most economical and efficient systems. Lab/Field Trip fee: \$35. Prerequisite: ANS 315, ANS 332 or concurrent enrollment.

495-1 to 6 Instruction in the Animal Sciences. Acquaints the students with different teaching environments and styles. Students will be expected to participate in instructing animal science courses. Prerequisite: junior standing. Special approval needed from the instructor. Not for graduate thesis option credit.

500-3 Research Methods in Agricultural Science. Experimental design and biometry as applied to biological and allied fields. Restricted to graduate students.

506-3 Instrumentation Methods in Agricultural Science. Basic methods and techniques of analytical instrumentation used in human and animal nutrition are taught in the lectures with applications of instruments carried out in the laboratories. Lab Fee: \$100. Special approval needed from the instructor.

515-3 Energy and Protein Utilization. (Same as FN 515) Energy and protein utilization including digestion, absorption and metabolism as related to mammalian physiology. Prerequisite: CHEM 339 or 340.

516-3 Minerals and Vitamins. (Same as FN 516) Basic and applied principles of mineral and vitamin metabolism. Emphasis on metabolic functions, reaction mechanisms and interrelationships. Prerequisite: CHEM 339 or 340.

525-3 Ruminant Nutrition. Physiology of rumen, action and microbiology of rumen digestion and utilization of carbohydrates, lipids, and nitrogenous substances in ruminant animals. Absorption and assimilation of nutrients by the ruminant animals. Feeding standards for maintenance, growth, reproduction and lactation. Two lectures per week. Prerequisite: ANS 415 or consent of instructor.

531-1 to 6 (2,2,2) Advanced Animal Physiology. Advanced Physiological concepts as they relate to mammalian systems-subjects covered are: (a) advanced reproductive physiology (b) developmental physiology (c) endocrine physiology. Prerequisite: ANS 331 or PHSL 201.

563-1 Fundamentals of Poultry. Fundamental principles of poultry production (broiler, turkey and egg production) including poultry physiology, breeding, incubation, housing, nutrition, disease control, management and marketing.

564-1 to 2 Aquaculture Techniques. (Same as ZOOL 564) Practical experience in aquaculture techniques. Course consists of modules which require student participation in hands-on experience, (e.g., spawning, induction of spawning, production of fry, operation and grading, diagnosis and treatment of parasites and diseases, and transporting of fish). One credit for completion of two modules. Register any semester, one year to complete elected number of modules. Written report and examination required for each module. Cost incurred by student varies with modules selected. Prerequisite: ANS 477 or ZOOL 477 or consent of instructor.

565-3 Advanced Ruminant Nutrition. Principles of nutrients metabolism and utilization by ruminant animals in relation to maintenance, growth, reproduction and lactation. Prerequisites:

ANS 415 or consent of instructor.

570-3 Advanced Aquaculture. (Same as ZOOL 570) Special topics in aquaculture and practical methods for the production of coldwater, coolwater, warmwater, and tropical aquatic species. Prerequisite: ANS 477 or ZOOL 477 or equivalent with a grade of C or better.

571-3 Fish Reproduction and Breeding. (Same as ZOOL 571) Principles of finfish reproductive strategies, reproductive physiology and captive breeding. The role of genetics and the use of biotechnology and various techniques in breeding programs will also be emphasized. The purpose of this course is to develop an understanding of fish reproduction and breeding techniques and to gain an appreciation of the complexity involved in managing a hatchery breeding program. Two lectures a week and one four-hour lab alternate weeks. Prerequisite: ANS 477 or ZOOL 477 or equivalent with a grade of C.

581-1 to 2 (1,1) Seminar. Problems relating to various phases of animal industries. Maximum of one hour per semester.

588-1 to 8 International Graduate Studies. University residential graduate study program abroad. Prior approval by the department is required both for the nature of the program and the number of credit hours.

590-1 to 3 Readings in Animal Science. Reading in specialized fields under direction of approved graduate specialists.

593-1 to 3 Individual Research. Investigation of a problem in animal science under the supervision of an approved graduate specialist.

595-1 to 4 Instruction in Animal Sciences. Acquaints the students with different teaching environments and styles. Students will be expected to aid faculty in the instruction of animal science courses.

599-1 to 6 Thesis. Credit is given for a Master's thesis when it is accepted and approved by the thesis committee. Not for non-thesis option credit.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded S/U or DEF only.

Anthropology

www.anthro.siu.edu/
pwelch@siu.edu

COLLEGE OF LIBERAL ARTS

Graduate Faculty:

Adams, Jane H., Professor, *Emerita*, Ph.D., University of Illinois-Urbana, 1987; 1987.

Balkansky, Andrew K., Professor, Ph.D., University of Wisconsin, 1997; 2003. Archeology, settlement patterns, social evolution, urbanism; Mexico, Central America.

Barrios, Robert E., Associate Professor, Ph.D., University of Florida, 2004; 2006. Public anthropology, medical anthropology, anthropology of disasters, science and technology studies, postcolonial studies, Mesoamerican ethnography.

Butler, Brian M., Adjunct Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1977; 1977. Archaeology, cultural resource management, prehistoric subsistence and settlement systems; southeastern and midwestern US.

Corruccini, Robert S., Professor, *Distinguished Scholar, Emeritus*, Ph.D., University of California, Berkeley, 1975; 1978.

Dabbs, Gretchen, Associate Professor, Ph.D., University of Arkansas, 2009; 2010. Bioarchaeology, Forensic Anthropology, Taphonomy; Middle East and North America.

Ford, Susan M., Professor, Ph.D., University of Pittsburgh, 1980; 1979. Physical anthropology, primate paleontology and systematics (especially New World monkeys and early anthropoids), evolutionary theory, functional and comparative anatomy; South America.

Fuller, Janet M., Professor, Ph.D., University of South Carolina, 1997; 2004. Sociolinguistics, bilingualism and language contact, discourse analysis, language and gender, Pennsylvania German, Mexican-American bilingual speech.

Gumerman, George J., Professor, *Distinguished Scholar, Emeritus*, Ph.D., University of Arizona, 1968; 1973.

Handler, Jerome S., Professor, *Distinguished Scholar, Emeritus*, Ph.D., Brandeis University, 1965; 1962.

Hill, Jonathan D., Professor, Ph.D., Indiana University, 1983; 1986. Ethnology, ecology, history, ethnomusicology, structural-semantic analysis; Amazon.

Hofling, C. Andrew, Professor, *Emeritus*, Ph.D., Washington University, 1982; 1996. Linguistics; discourse analysis, Maya; Mesoamerica.

Lapham, Heather A., Adjunct Associate Professor, Ph.D., University of Virginia, 2002; 2002. Archeology of trade and exchange, European-Indian interaction, faunal analysis, beads; eastern US.

Maring, Ester G., Assistant Professor, *Emerita*, Ph.D., Indiana University, 1969; 1965.

Maring, Joel M., Associate Professor, *Emeritus*, Ph.D., Indiana University, 1967; 1963.

McCall, John, Associate Professor and *Chair*, Ph.D., Indiana University, 1992; 1995. Sociocultural anthropology, social theory, epistemology, history, ritual studies, medical anthropology, expressive culture; Africa.

Muller, Jon D., Professor, *Emeritus*, Ph.D., Harvard University, 1967; 1966.

Reichard, Ulrich, Associate Professor, Ph.D., Goettingen University, 1995; 2006. Primate evolution, behavior, socioecology and cognition; human origins and human evolution; Asian primates.

Rice, Don, Professor, *Emeritus*, Ph.D., Pennsylvania State University, 1976; 1991.

Rice, Prudence M., Professor, *Distinguished Scholar, Emerita*, Ph.D., Pennsylvania State University, 1976; 1991.

Riley, Carroll L., *Distinguished Professor, Emeritus*, Ph.D., University of New Mexico, 1952; 1955.

Scott, Jeremiah, Assistant Professor, Ph.D., Arizona State University, 2002; 2010. Biological anthropology, primate evolution, paleobiology.

Shimada, Izumi, Professor, *Distinguished Scholar*, Ph.D., University of Arizona, 1976; 1994. Archaeology, complex societies, technology and craft production, urban and ceremonial centers, experimental archaeology; Andes.

Sutton, David, Professor, Ph.D., University of Chicago, 1995; 1999. Anthropological theory/ethnographic inquiry, social anthropology, cultural analysis.

Wagner, Mark, Adjunct Associate Professor, Ph.D., Southern Illinois University, Carbondale, 2010; 2011. Staff Archaeologist.

Welch, Paul D., Associate Professor, Ph.D., University of Michigan, 1986, 2001. Archaeology, politics and economics in midrange societies, eastern U.S. quantitative methods.

The Department of Anthropology offers graduate programs leading to the Master of Arts and Doctor of Philosophy degrees. Provided the student has been admitted to the Graduate School and meets its requirements, acceptance and continuation in the graduate program are at the discretion of the Department of Anthropology.

The philosophy of the Department of Anthropology is to produce students with broad backgrounds in the major subfields of anthropology and expertise in particular specialty areas. Within this philosophy, and subject to the requirements discussed below, the department offers a flexible program which will serve students with diverse needs and goals.

Admission

The applicant to the anthropology program must send a completed application for admission to graduate study and official copies of all transcripts directly to the department, and must meet all Graduate School requirements for entry. Applicants whose native language is not English must achieve a TOEFL of 600 paper score, 250 computer score, 100 on the internet based test, or higher in order to gain admittance in the program. The Graduate Record Exam (GRE) is required for all U.S. applicants. Preference will be given to applicants who score in percentiles above 40. Although not required to take the GRE prior to admittance, all foreign students are strongly encouraged to take the exam prior to entering the graduate program and are required to take the exam before the end of their first year in the program.

Applicants who wish to be considered for university Graduate School fellowships must have all application materials completed by December 15. Applicants who wish to be considered for admission into the graduate program in the fall semester of the next academic year and who wish to be

considered for departmental graduate assistantships must have all application materials completed by March 1. Applications not received or completed prior to March 1 will be considered only in exceptional cases, as determined by the Director of Graduate Studies in consultation with other members of the Graduate Studies Committee.

In addition, the applicant must send a completed departmental application for admission and financial aid form, personal data sheet, statement of academic and professional goals, and arrange for three letters of recommendation to be sent to the Director of Graduate Studies of the Department of Anthropology. All necessary forms will be provided to applicants by the department. No special program of previous work is required. Applicants with academic degrees in fields other than anthropology are encouraged to apply.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Anthropology. Applicants must pay this fee by credit card.

Master's Degree Program

In addition to the master's degree requirements specified in the Graduate Catalog, the following departmental requirements apply to all M.A. degree candidates:

1. Each student must complete three core courses: ANTH 500E, the core course in their subfield, and a course determined in consultation with the chair of the MA committee. It is preferred that these courses be completed during the first year; no more than one core course can be deferred into the second year, and ANTH 500E must be completed during the first Fall semester in the program. At the end of the student's first year of study, the faculty will evaluate each student's performance in the completed core courses along with the rest of the student's record and arrive at a decision on the student's continuation in the program. This decision will take into account the overall evidence of the student's abilities, potentials, and interests.
2. Each student must complete 1 or more regular graduate-level courses or seminars in each of 2 subdisciplines of the student's choice (from among archaeological, linguistic, physical, sociocultural anthropology) beyond the core courses.
3. A further 9 hours of course work will be assigned by the student's committee after consultation with the student. These 9 hours may include up to 4 hours of graduate credit to meet tool requirements, and may not include more than 3 hours of independent study or thesis. No more than 3 hours of credit in ANTH 501, 590, 597, and 599 (thesis) may be applied toward the Graduate School requirements of 30 hours of graduate course credit and 15 hours of 500-level credit. The department requires 2 additional seminars (500-level course) beyond the core courses and the thesis hours.
4. Each student must demonstrate a reading competence in a relevant language foreign to the student.

Students entering the program may petition to have previously taken courses accepted for credit as equivalent to core courses in cases where the equivalence can be documented.

M.A. Degree Committee, Thesis, Research Paper. Each student in the M.A. degree program will consult with the Director of Graduate Studies and relevant faculty members to select a three-person faculty committee, which will assume major responsibility for the student's advisement. At least 2 members of this committee, including the chair, must be from the Department of Anthropology, and the third member may be selected from outside the department. At least the chair should be chosen by the end of the first year, and the entire committee by the end of the third term.

Under the direction of the M.A. degree committee, the student will complete a thesis and register for at least three hours of Anthropology 599 while doing so. A student may submit a published paper, or one accepted for publication in an approved professional journal, instead of a thesis, or may be authorized by the department to substitute a research paper for the thesis. Passing of a comprehensive examination on the student's entire program is a Graduate School requirement. One paper copy of the thesis, research paper, or article must be deposited with the department before the degree is granted.

An option is available, at the discretion of the departmental faculty, to allow exceptional M.A. students accelerated entry in the doctoral program at the end of their first year of M.A. study. For these students, the following are sufficient for the M.A. degree in Anthropology:

1. completion of 30 hours of coursework, including 21 hours at the 500 level (which can include up to 9 hours of Anthropology 598 - Research); and
2. a research paper (normally one prepared for a class in the student's subdiscipline) approved by the student's adviser and the Director of Graduate Studies, and submitted to the Graduate School.

No additional stipulations on the nature of the coursework (beyond the core courses) nor a language requirement are imposed.

The Department of Anthropology may offer direct post-baccalaureate degree entry to the doctoral program under exceptional circumstances, when a student's past work is determined to be of sufficient scope and excellence as to merit equivalence to an M.A. research degree. Students admitted under this option are subject to all existing requirements for the doctoral degree; the admissions/advisory committee for the student may add extra requirements based on the student's background.

Doctor of Philosophy Degree Program

Applicants to the Ph.D. degree program must complete the equivalent of the master's degree and apply directly to the Graduate School for admission as a doctoral student. Three letters in support of the application must be forwarded to the Director of Graduate Studies in the Department of Anthropology. Students must also supply a statement of goals for their programs and subsequent professional careers. The department will offer an accelerated entry option to students who have been admitted at M.A. level and who are judged by the faculty of the department to be prepared to begin research at the doctoral level. Such students must complete at least one term in the M.A. degree program before being admitted at Ph.D.

level, and must then meet all retention and exit requirements for the regular doctoral option. The students need not submit the application materials required of regular applicants to the Ph.D. degree program outlined above.

Students are required to demonstrate breadth of competence in the four sub-disciplines of Anthropology. Retention beyond the first year will be determined by an evaluation of course work for the first year and the maintenance of a minimum GPA of 3.2. Students will then form a faculty committee in consultation with the Director of Graduate Studies and relevant members of the faculty. The committee must include at least 5 members of the graduate faculty, at least 3 of whom (including the chair) must be from within the department, and at least 1 from outside: the normal case will be 4 from within and 1 additional.

The requirements for the Ph.D. degree include the following:

1. Additional course work in anthropology and other fields within the student's interests. Of the 24 hours of credit required to establish residency, 9 must be in 500-level anthropology courses other than 500A, B, C, D, E, 501, 585, and 597. The Ph.D. committee is expected to help formulate a study program that will usually involve at least one additional academic year of full-time course work beyond the M.A. degree.
2. Research tool requirements. These vary and will be determined between the students and the committee, subject to approval of the chair of the department. In all cases a certified reading knowledge of at least one foreign language will be required and at least one other tool. Other possible tools could include, for example, computer science, statistics, a second foreign language, or a combination of these or others.
3. Administration by the committee of a special examination with both written and oral components covering topical and geographical specialties (the preliminary or candidacy exam). The student may not take the examination until 2 years of full-time post-baccalaureate study have been completed and SIU residency attained. The student should take this examination by the end of three years of full-time Ph.D. level work. In evaluating the examination, the committee may pass the student, pass with conditions, fail the student but allow retaking of part or all of the examination at a later time or fail the student and recommend dismissal from the program. If a student fails the examination and the committee allows reexamination, it must occur within one year of the first examination and only one retake is allowed.
4. Dissertation prospectus approved by student's committee and formally presented to the department.
5. Formal experience in teaching.

Ph.D. Candidacy. After completion of the above requirements, the department will recommend a student to the Graduate School for candidacy. The candidate will design dissertation research in consultation with the committee and will undertake the research necessary to acquire the materials for the dissertation. Candidates must register for 24 hours of credit under ANTH 600.

When a final draft of the dissertation has been accepted by

the Ph.D. committee, an oral defense of the dissertation and all supporting work will be held in accordance with Graduate School requirements. After a successful dissertation defense and completion of final revisions of the text, the student must submit the dissertation to the Graduate School in accordance with its guidelines, and a paper copy to the Department of Anthropology.

Courses (ANTH)

404-3 Art and Technology in Anthropology. An introduction to the basic ways in which people utilize the natural resources of their habitat to meet various needs, such as food, shelter, transportation and artistic expression. The nature of art, its locus in culture and its integration into technical society will be considered.

405-3 How to Do Anthropological Research. This course is designed to teach students the skills needed to consume the professional literature of anthropology intelligently. The subjects covered include: the importance of research questions or hypotheses, the logic of deducing test implications, literature search, sampling, measurement issues, data reduction and graphing and simple inferential statistics.

410A-3 Practicing Anthropology. This course is designed to get students acquainted with the notion of development and the challenges that the practice of anthropology faces when directed towards development and social change in both developing and developed countries. Prerequisite: ANTH 240D recommended for undergraduates.

410C-3 Economic Anthropology. The study of non-Western economic systems. Prerequisite: ANTH 240D recommended for undergraduates.

410D-3 Ethnomusicology: Theory and Method. This seminar examines the social, cultural, experiential, evolutionary, and historical dimensions of music. It is designed for students for whom music is a topical interest, who need to gain foundational knowledge about the theory and methods of ethnomusicology. We will review the history of ethnomusicology, major theoretical debates, and current issues.

410E-3 Anthropology of Law. Anthropological thought on imperative norms, morality, social control, conflict resolution and justice in the context of particular societies, preliterate and civilized. Law of selected societies is compared to illustrate important varieties. Prerequisite: ANTH 240D recommended for undergraduates.

410F-3 Anthropology of Religion. A comparative study of (religious) belief systems, with emphasis upon those of non-literate societies. Examination of basic premises and elements of these belief systems, normally excluded from discussions of "Great Religions". Prerequisite: ANTH 240D recommended for undergraduates.

410G-3 Urban Anthropology. Contemporary cities are dynamic places where populations that differ in terms of class, race, and ethnicity establish particular relationships with geographic space and architectural structures. This class is designed to teach students how to experience and analyze urban spaces from an anthropological perspective, and how to apply anthropological theory and methods in urban planning.

410H-3 African Expressive Culture. (Same as AFR 410H) This course examines aspects of African expressive culture

including the visual arts, music, dance, orature, cinema, drama and ceremony from an anthropological perspective. Particular attention is given to analysis of African expressive culture in social context and the role of the arts in the practice of politics, religion, medicine and other aspects of African life. Many of the expressive genres examined deal with historical representation and political resistance. Therefore, this course provides insights into African history and politics through the creative representations of African artists.

410I-3 Identities: Global Studies in Culture and Power. This course surveys recent studies of sociocultural identities based on ethnicity, class, race, gender, nationality, age, language, and other criteria, as aspects of broader struggles over power and meaning. Topics to be addressed are critical analyses of identity politics in the Americas, Europe, Middle East, Asia, and other regions; historical approaches to studying identities; and ethnographic studies of transnational and diasporic communities.

410J-3 Kinship and Social Organization. Universal features of non-Western systems of kinship terminology and social organization. Topics include the structure and functioning of kinship systems, lineages, clans, sibs, phratries, moieties and tribal units. Prerequisite: ANTH 240D recommended for undergraduates.

410K-3 Ecological Anthropology. An examination of the relationship of past and present human populations in the context of their natural and social environments.

410L-3 Transcending Gender. (Same as WGSS 410) How do humans become male and female in different societies? Can men become women and women become men? What other gender possibilities exist? Is male dominance universal? What are the sources of male and female power and resistance? Do women have a separate culture? What are the relationships between gender, militarism and war? These and other questions will be examined in cross-cultural perspective.

410M-3 Healing and Culture. This course examines systems of healing and medicine from an anthropological perspective. The theory and practice of medicine in different cultures, including Western biomedicine, are considered. Particular attention is given to the ways in which medical knowledge gains legitimacy in different social contexts and the problems which arise in culturally heterogeneous arenas when different medical paradigms contend for legitimization.

410N-3 Anthropology of Popular Culture. An examination of recent approaches to popular culture, material culture and consumption in anthropology. Special topical focus will include sports, television and movies, food and shopping. The course will be organized around several fieldwork projects in the Carbondale community. Prerequisite: ANTH 240D recommended for undergraduates.

410O-3 Colonialism and Post-Colonialism. This course is designed to familiarize students with the experience of colonialism and the political, social, cultural implications of it. The analysis will not be limited to the study of the colonial period, but it will examine the complexities of contemporary post-colonial societies and cultures.

410P-3 Ethics and Research. This course examines the risks that any anthropological research poses, both in fieldwork and writing, as well as the questions and dilemmas that any social

scientist should be aware of before getting involved in any research practice. Prerequisite: ANTH 240D recommended for undergraduates.

410Q-3 Food, Symbol, and Society. In this course we will explore all aspects of the social uses and symbolic meanings we attach to food and eating. How do we use food to make friends, to make enemies, and to make ourselves? What is changing in our food consumption patterns? What are some of the politics and ethics involved in producing and marketing food? What is the significance of eating out? How do we analyze the smell and taste of food cross-culturally?

410R-3 Anthropology of Science and Technology. Technologies and scientific knowledge are commonly thought of as being universally applicable and as representations of truths about the operations of the world that are independent of culture. Anthropological studies, however, suggest that the efficacy of scientific knowledge and technologies is specific to the localities in which they are produced. This course introduces students to the primary concerns of the anthropology of science.

410T-3 Anarchy, Power and Egalitarianism: Anthropological Perspectives. This class considers anthropological evidence for and approaches to issues of power and rulership in relation to egalitarian or anarchist societies, that is, societies without arches (Greek for leaders/laws). We will look at how such societies function, what kinds of history and mythology they produce, how their exchange systems are elaborated, and why they have remained “under the radar” of the modern system of state societies. What can egalitarian/anarchist societies tell us about dominant assumptions about the nature of power and governance? How have ideas about “direct democracy” shaped new social and cultural practices? What is the relationship between these projects and movements and the larger societies in which they exist?

412-3 Visual Anthropology as a Research Methodology. The new digital technologies provide exciting new ways to conduct anthropological research and present research findings. They also raise technical, methodological and ethical questions for researchers. This course examines these issues through readings and analysis of examples of use of these media - digital video, still photography, and web authoring – in the field and in presentation to a scholarly and larger public.

415-3 Sociolinguistics. (Same as LING 415) History, methodology and future prospects in the study of social dialectology, linguistic geography, multilingualism, languages in contact, pidgin and creole languages, and language planning.

416-3 Spanish in the U.S.A. (Same as LING 416) This course offers a survey of the historical, social, political, linguistic and educational issues surrounding the Spanish language in the United States. Topics to be addressed include Spanish language use and bilingualism, language maintenance and shift, education of Latino populations, Hispanic diversity, and Latino literature.

417-3 Language Contact. This course will introduce students to the social conditions under which language contact occurs and the cultural and linguistic consequences of such contact. Primary topics will be language maintenance and shift, ideologies and attitudes regarding bilingualism, and language development and change, using data from a variety of languages and cultures. Designed to Provide a comprehensive background for research on bi- or multilingual settings. Prerequisite: one of the following:

ANTH 420B, LING 200, LING 300, ANTH 500B or LING 505.

420-3 Mayan Texts. Detailed examination of Mayan texts written in Mayan languages in their cultural contexts. Texts may range from pre-Columbian hieroglyphic texts, colonial Mayan texts to modern texts.

421-3 Descriptive Phonetics and Phonology. The course introduces students to the study of phonetics and phonology from an anthropological and descriptive perspective. The course is interested in how are sounds produced and how do they then become meaningful in languages. Special attention is paid to metrical phonology.

422-3 Grammatical Analysis. A basic introduction to the analysis of morphology and syntax in languages of the world from a functional perspective. A broad range of grammatical patterns will be introduced and examined, equipping the student to investigate the diversity of language structures.

424-3 Native American Verbal Art. (Same as ENGL 424) This class examines the oral traditions (story-telling, poetry, song, chant, etc.) of Native American Peoples. This class focuses on the ways that Native American verbal art has been presented/represented by outsiders as well as on the formal features and forms of Native American verbal art. Attention is paid to the place and structure of verbal art in Native societies. This class focuses on the broad spectrum of verbal art in North America.

425-3 Cognitive Anthropology. The theory of culture as cognitive organization is explored. Among the topics are: Formal analysis of lexical domains, folk classifications and strategies, the problem of psychological validity, linguistic determinism and relativity, biogenetic and psycholinguistic bases of cognition and the "new ethnography."

426-3 Gender, Culture, and Language. (Same as WGSS 426 and LING 426) This course is designed for students who have had some exposure to gender studies. It will focus on readings in language and gender in the fields of anthropological- and socio-linguistics. Issues to be addressed are the differences between language use by men/boys and women/girls, how these differences are embedded in other cultural practices, and the various methodologies and theories that have been used to study gendered language use.

428A-3 Languages and Cultures of the Americas- North America. (Same as ANTH 328A) This course studies the myriad of indigenous languages of the Americas. Focus is both descriptive and anthropological. Languages are considered with respect to their grammatical and discursive structures, historical relations, and their place within the sociocultural milieu of speakers. Areal focus is North America.

428B-3 Languages and Cultures of the Americas- Mesoamerica. (Same as ANTH 328B) This course studies the myriad of indigenous languages of the Americas. Focus is both descriptive and anthropological. Languages are considered with respect to their grammatical and discursive structures, historical relations, and their place within the sociocultural milieu of speakers. Areal focus is Mesoamerica.

428C-3 Languages and Cultures of the Americas- South America. (Same as ANTH 328C) This course studies the myriad of indigenous languages of the Americas. Focus is both descriptive and anthropological. Languages are considered with respect to their grammatical and discursive structures, historical relations, and their place within the sociocultural

milieu of speakers. Areal focus is South America.

430A-3 Archaeology of North America. Detailed study of the early cultures of North America. Emphasis on the evolutionary cultural development of North America.

430B-3 Archaeology of Meso-America. Detailed study of the early cultures of Meso-America with emphasis on the evolutionary cultural development of Meso-America.

430C-3 Archaeology of Africa. Detailed study of Sub-Saharan African prehistoric and historic cultures with emphasis on ecological, evolutionary and historical developments. The course examines human cultural origins, the rise of civilizations, and the diversity of human societies into early historic times.

430D-3 to 9 (3 per topic) Art and Archaeology of the Ancient Mediterranean. (Same as CLAS 310 and AD 407) An introduction to art historical, archaeological, and historical approaches to the physical remains of the ancient Mediterranean. Emphasis normally on Greece or Rome. Can be repeated if offered on different topics. Occasionally offered overseas.

430E-3 Archaeology of Ancient Egypt. Detailed study of the early culture of ancient Egypt with emphasis on the evolutionary cultural development of Egypt. No prerequisites.

430F-3 Archaeology of South America. Survey of the prehistory and ethnohistory of South America, including the peopling of the South American continent, the development of early cultures, the rise and fall of Andean empires, and the impact of Spanish contact and conquest.

434-3 Advanced Origins of Civilization. A survey of the major developments of the human past, culminating in the rise of cities and states. Areal coverage varies, but generally includes the ancient Near East, Mesoamerica, Andean South America, South Asia (India and Pakistan), and China. Graduate standing required.

440A-3 The Fossil Evidence for Human Evolution. An advanced consideration of the fossil evidence for human evolution and evaluation of the various theories regarding the course of human evolution.

440B-3 Race and Human Variation. A consideration of the range, meaning and significance of contemporary human biological variation, including evolutionary and adaptive implications and the utility of the race concept.

440C-3 Context of Human Evolution. This course will provide an ecological, behavioral, geological, geographic and theoretical context from which to understand the evolutionary history of modern humans. The course is designed to complement ANTH 440A.

441A-3 Laboratory Analysis in Archaeology: Ceramics. Being durable, abundant, and full of information about food, social customs, styles, and even ideology, pottery provides a wealth of information about past societies. This course covers the major aspects of pottery analysis, including studies of raw materials, production techniques, function, and exchange. The course is partly lecture, partly lab based.

441B-3 Laboratory Analysis in Archaeology: Archaeometry. This course surveys technical methods of the physical and natural sciences in archaeological analysis. Rather than focusing on a specific set of materials (as is done in the other courses in the ANTH 441 series), this course covers a broad spectrum of technical studies, including chronometry as well as the analysis of ceramics, metals, textiles, and ecofacts.

441C-3 Laboratory Analysis in Archaeology: Lithics.

This course provides an introduction to lithic analysis in archaeology. Students will be introduced to technological and functional analyses, typological studies, use-wear analysis, debitage analysis, and related subjects. The focus will be on chipped stone but ground stone will also be considered. The overall goal is to show how lithic analysis can address broader anthropological questions.

441D-3 Laboratory Analysis in Archaeology: Zooarchaeology.

This course introduces students to zooarchaeology, including the techniques of faunal analysis, current theories, and methods used to interpret faunal data. It familiarizes students with the major research questions that animal remains from archaeological sites can be used to investigate. Students will be given their own sample faunal assemblage which they will be expected to sort, analyze, and interpret during the course of the semester.

442-1 to 12 Working with Anthropological Collections.

Management, curation and analysis of anthropological collections as part of a research project created by the student. May be taken independently or as a follow-up to ANTH 450, 495, 496, 497, 596, or 597.

444-3 Human Genetics and Demography. A course in human genetics with an emphasis on population genetics and demography of modern and ancient human populations.

450A-3 Museum Studies - Learning in Museums. A detailed study of museum in the context of their use of exhibitions as an educational medium. Covers the evolution of the museum as a learning environment and the application of learning theory and principles in modern museums. Emphasis is placed on practicum experiences involving the design of learning experiences and educational programs in the museum setting.

450B-3 Museum Studies - Methodology and Display. A detailed study of museums in the context of their use of exhibitions as an educational medium. Focus on the history of museums exhibitions and instruction in the fundamentals of educational exhibit design and curatorial research. Emphasis is placed on practicum experiences involving the design of educational exhibits and curatorial research. Laboratory/field trip fee: \$20.

450C-3 Museum Studies: Conservation of Anthropological Collections. A study of the principles and methods used in the conservation of ethnographic and archaeological materials. The course examines strategies employed in the preservation of research collections, including preventative care, treatment, research, and documentation. Emphasis is placed on material identification, object use-life, and the chemistry of organic and inorganic materials relative to conservation practices.

455A-3 Dental Anthropology. Developmental origins of vertebrate teeth, anatomy and occlusal function, taxonomic and dietary aspects of the Primate dentition, detecting hominid origins; modern human odontology: genetics, pathology, forensic analysis. Much laboratory activity with materials.

455B-3 Special Topics in Biological Anthropology. (May be repeated once for a maximum of 6 hours.) This course will cover special topics in Biological (Physical) Anthropology. Topics will vary between offerings, and may include special or current issues in forensic research, human variation, genetics and evolution, primate behavior, ecology, conservation, or evolution, and human evolution.

455C-3 Primate Behavior and Ecology. Advanced study of the behavior and ecology of living nonhuman primates. The course will cover the geographic distribution and basic ecological features of nonhuman primates and the relationships between resource distribution, social organization, mating system and behavior which will help to reconstruct the evolution of nonhuman and human primate sociality.

455D-3 Quantitative Methods. Classic inferential statistics as well as resampling approaches and pattern recognition philosophy: chi square, t test, ANOVA, correlation and regression, nonparametric versus parametric methods, multiple regression, all involving diverse anthropological data examples. This course in combination with Ed. Psych 506 or other approved substitute satisfies a doctoral tool requirement. Does not count as a bioanthropology elective toward the M.A. degree.

455E-3 Biomedical Anthropology. Biological disorders and maladaptation in the human species. Major themes include epidemiological methods, the modern Epidemiological Transition to "Western" disease patterns, other transitions resulting from "discordant adaptation" diet, the relation to sociomedical anthropology, and the evolution of human disease (including osteological paleopathology) from Paleolithic to industrialized contexts.

455F-3 Nutritional Anthropology. The anthropological investigation of diet and nutrition in past and present human populations. This course investigates the diets of our human ancestors, human food revolutions, methods used to evaluate diet and nutrition in past human populations, and contemporary issues in food production and distribution.

455G-3 Primate Biology and Evolution. Advanced study of primate biology, evolution, and systematics, with special emphasis on primate functional anatomy and dentition. The course will cover the taxonomy of primates, the evolution of the primate radiation and primate origins, and biological features which elucidate primate relationships and help to reconstruct behavior and ecology of extinct primates.

455H-3 Osteology. This lab-based course is for the advanced student interested in the analysis of the human skeleton. An intensive study of human skeletal anatomy, the methods used in the identification and analysis of skeletal remains in archaeological contexts, and osteological evidence for disease, diet, and trauma in past populations.

455I-3 Comparative and Functional Primate Anatomy. Advanced study of the functional anatomy of primates with a strong emphasis on primate osteology. The course will compare biology of living primates, including humans, to elucidate adaptations in anatomy of nonhuman primates and to better understand the origins and specific anatomical adaptations in the human lineage.

456-3 Forensic Taphonomy. Critical to the successful forensic anthropological analysis of human remains is an understanding of the events and processes that affect decomposition of biological tissues. This course is designed to teach students about a variety of process affecting decomposition of human tissues, including (but, not limited to) animal scavenging, insect activity, environmental conditions, personal characteristics of the deceased and human vectors (dismemberment, burning, burial, etc.). Prerequisite: ANTH 231 OR ANTH 455H.

460-1 to 12 Individual Study in Anthropology. Guided research on anthropological problems. The academic work may be done on campus or in conjunction with approved off-campus (normally field research) activities. Special approval needed from the instructor.

470A-3 People and Cultures-Africa. (Same as ANTH 310A) A survey of the prehistory, cultural history, and modern cultures of peoples in Africa.

470C-3 People and Cultures- the Caribbean. (Same as ANTH 310C) A survey of the prehistory, cultural history, and modern cultures of peoples in Caribbean.

470D-3) People and Cultures-Europe. (Same as ANTH 310D) A survey of the prehistory, cultural history, and modern cultures of peoples in Europe.

470E-3 People and Cultures-South America. (Same as ANTH 310E) A survey of the prehistory, cultural history, and modern cultures of peoples in South America.

470F-3 People and Cultures- the Middle East and North Africa. (Same as ANTH 310F) A survey of the prehistory, cultural history, and modern cultures of peoples in Middle East and North Africa.

470G-3 People and Cultures-North America. (Same as ANTH 310G) A survey of the prehistory, cultural history, and modern cultures of peoples in North America.

470I-3 People and Cultures-Mesoamerica. (Same as ANTH 310I) A survey of the prehistory, cultural history, and modern cultures of peoples in Mesoamerica.

470K-3 People and Cultures-Native Peoples-Southwest. (Same as ANTH 310K) A survey of the prehistory, cultural history, and modern cultures of peoples in Native Peoples of the Southwest.

484-1 to 9 Internship: Curation of Archaeological Collections. This internship is intended to introduce students to the management of archaeological collections through hands-on work with materials, typically those housed at the Center for Archaeological Investigations' curation facility. Students will be exposed to a variety of issues that affect local, state, and national curation facilities such as conservation, preservation, accessibility, accountability, and ethical concerns. Internship projects range from collections documentation and research to object digitalization and other special curation projects. Special approval needed from the instructor to register.

485-3 to 9 Special Topics in Anthropology. Selected advanced topics in anthropology. Topics vary and are announced in advance. May be repeated as the topic varies. Special approval needed from the instructor.

490-3 Field Methods and Analysis in Linguistic Anthropology. Includes theoretical background and a project in the linguistic aspects of culture.

495-3 to 8 Ethnographic Field School. Apprentice training in the field in ethnographic theory and method. Students will be expected to devote full time to the field school. Special approval needed from the instructor

496-1 to 12 Field School in Archaeology. Apprentice training in the field in archaeological method and theory. Students will be expected to be in full-time residence at the field school headquarters off campus. Special approval needed from the instructor. Students will be charged a \$50 fee for supplies.

497-3 to 6 Field School in Bioarchaeology. This course

offers training in archeological field techniques related to the excavation and analysis of human skeletal remains. Students are expected to be in full-time residence at the field school site, which may involve international travel. Offered during the summer. Special approval needed from the instructor.

500A-3 Theory and Method in Biological Anthropology. Current topics in biological evolution and variation, including the theoretical and methodological background to each. Topics will be drawn from the four major areas of physical anthropology: genetics and evolutionary theory, primate studies, human fossil record and human variation. Special approval needed from the instructor.

500B-3 Theory and Method in Linguistic Anthropology. Overview to enable students to identify, describe and understand the theories, methods and goals of linguistic anthropology. Emphasis is placed on the relationships of language to culture and cognition from an anthropological perspective. Topics include language origins, descriptive linguistics, language and cognition, synchronic and diachronic variation, language in cultural context, discourse and pragmatics, writing systems and literacy. Special approval needed from the instructor.

500C-3 Theory and Method in Archaeology. Overview of the currents and controversies in anthropological archaeology in their historical and theoretical context. Topics include history of archaeological theory, explanation in archaeology, limitations of the archaeological record and archaeological approaches to the study of cultural variation. Special approval needed from the instructor.

500D-3 Theory and Methods in Sociocultural Anthropology. This course is designed to enable students to identify, define and critically understand the major theories and methods of contemporary sociocultural anthropology. The course is organized into three general parts, reflecting broad areas of theoretical inquiry which have expanded most rapidly in anthropology since 1960: (1) ecological, economic and other materialist approaches; (2) cognitive, symbolic and other interpretive approaches; and (3) recent and ongoing research strategies, including critical and historical approaches. Special approval needed from the instructor.

500E-3 History of Anthropological Theory. Covers history of pre-20th century social theory and a survey of 20th century theories in socio-cultural anthropology. Topics include: Enlightenment social theory, social evolutionism, racial formalism, and the Boasian critique, relativism and functionalism; cultural materialism, cultural ecology, neo-evolutionism, ecological anthropology, structuralism, ethnohistory, interpretive anthropology, practice theory, post-modernism, and gender theory. Special approval needed from the instructor.

501-(3-6, 3 per semester) Practicum in Educational Anthropology. This practicum provides anthropology students actual classroom experience in a lower division anthropology course. Students will be involved in the teaching of designated courses. Faculty will meet with practicum members on a regular basis, critique their lectures, and together with them work out problems and plan future directions of the course. Graded S/U only. Restricted to anthropology doctoral students only.

510-3 to 9 (3 per topic) Seminar Archaeology of North America. Seminar studying issues concerning the prehistoric and historic inhabitants of North America north of Mexico. From year to

year, the precise areal and topical coverage will vary, as will the instructors. Students should consult department about subjects to be offered.

511-2 to 9 (2 to 3 per topic) Seminar in Meso-American Archaeology. From year to year, the areal and topical coverage of this course will vary, as will the instructors. Students should consult the department about subjects to be covered.

513-3 to 9 (3 per topic) Seminar in Archaeology. Seminars in varying topics in archaeology. Students should consult department about subjects to be covered.

514-3 to 9 (3 per topic) Seminar in South American Archaeology. Seminar will focus upon archaeological investigations of specific cultures, regions, time periods or cultural processes in South America. From year to year the areal and topical coverage of the course will vary, as may the instructor. Students should consult the department about subjects to be covered. Prerequisite: ANTH 430F, 500C, 500D or 500E or consent of instructor.

515A-3 to 9 (3 per topic) Seminar in Sociocultural Anthropology. Advanced seminar on theoretical perspectives in the social sciences and humanities. Topical focus will vary from year-to-year. Course may be taken again as topics vary. Extensive readings are drawn from a wide range of sources.

515B-3 to 9 (3 per topic) Seminar in Sociocultural Anthropology. Intensive analysis of a limited set of monographs organized around a theoretical problem or set of problems.

516-3 to 9 (3 per topic) Seminar in the Archaeology of Complex Societies. Seminar reviews selective literatures dealing with theoretical and methodological issues in archaeological investigation of pre-industrial, regional complex societies. From year to year the topical coverage of this course will vary, as will the instructors. Students should consult the department about subjects to be offered. Prerequisite: ANTH 500C, 500D or 500E; or consent of the instructor.

520-2 to 6 (2 to 3 per topic) Seminar in New World Ethnology. From year to year, the areal and topical coverage of this course will vary, as will the instructors. Students should consult the department about subjects to be covered.

521-2 to 6 (2 to 3 per topic) Seminar in Ethnology of Latin America. From year to year, the areal and topical coverage of this course will vary, as will the instructors. Students should consult the department about subjects to be covered.

522-2 to 6 (2 to 3 per topic) Seminar in the Anthropology of Oceania. From year to year, the areal and topical coverage of this course will vary, as will the instructors. Students should consult the department about subjects to be covered.

523-2 to 6 (2 to 3 per topic) Seminar in Anthropology of Africa. From year to year, the areal and topical coverage of this course will vary, as will the instructors. Students should consult the department about subjects to be covered.

525-3 Theorizing the Body. (Same as WGSS 525) This seminar explores a broad range of theoretical readings centering on the human body. Once the province of medical science and certain schools of philosophy, recent research in the social sciences and the humanities position "the body" as a primary site of socialization, gendering, and social control.

527-3 Seminar in Gender. An advanced seminar in anthropological approaches to gender. Theoretical and topical approaches will vary from semester to semester. In any given semester topics may include: power, agency, ethnographies

of gender, the construction of masculinity/femininity, gender diversity, gender and the state, gender and everyday. Prerequisite: ANTH 500D or consent of instructor.

528-3 Seminar in Culture and Materiality. An advanced seminar in anthropological approaches to culture and materiality. Theoretical and topical approaches will vary depending on the instructor and semester. In any given semester topics may include: human and non-human agency, the social and the technological, science studies, production and consumption, human-environment relations, the role of the senses in culture, and knowledge, skill and practice. Prerequisite: ANTH 500D or consent of instructor.

530-3 to 9 (3 per topic) Seminar in Paleoanthropology. Topics will be drawn from any dealing with the fossil and/or contextual evidence for human evolution (e.g., *The Place of Neandertals in Human Evolution*; *Taphonomy and Paleoeology*; *Origins of Bipedalism*). From semester to semester, the topical coverage will vary, as will the instructor. Students should consult the department about subjects to be covered.

531-3 to 9 (3 per topic) Seminar in Bioarchaeology. Seminars will focus on theoretical and methodological issues relating to the excavation and analysis of human skeletal remains. From semester to semester, the topical coverage will vary, as will the instructor. Students should consult the department about subjects to be covered.

532-3 to 9 (3 per topic) Seminar in Human Biological Variation. Topics will be drawn from any of the areas of biological variation among humans (e.g., *Comparative Epidemiology*, *Human Sociobiology*, *Demography and Paleodemography*, or *Multivariate Pattern Recognition*). From semester to semester, the topical coverage will vary, as will the instructor. Students should consult the department about subjects to be covered.

534-3 to 9 (3 per topic) Seminar in Evolutionary Theory. Seminars will be constructed around various theoretical and/or substantive issues in current biological evolutionary theory (e.g., *Issues in Paleobiology*, *Evolution At and Above the Species Level* or *Phylogenetic Systematics*). From semester to semester, the topical coverage will vary, as will the instructor. Students should consult the department about subjects to be covered.

536-3 to 9 (3 per topic) Seminar in Primate Behavior and Ecology. Topics will vary among theoretical and substantive issues in primate behavior and ecology (e.g., *Primate Social Structure*, *Socioecology*, *Diet*, *Locomotion and Foraging Strategies*, or *Reproductive Strategies in Primates*). From semester to semester, the topical coverage will vary, as will the instructor. Students should consult the department about subjects to be covered.

538-3 to 9 (3 per topic) Seminar in Primate Evolution. Topics will vary among substantive (taxonomic), theoretical, and contextual issues in primate evolution (e.g., *Catarrhine Evolution*, *Anthropoid Origins*, *Molecular vs. Fossil Evidence for Hominoid Phylogeny* or *The Role of Body Size and Allometry in Primate Evolution*). From semester to semester, the topical coverage will vary, as will instructor. Students should consult the department about subjects to be covered.

544-3 Discourse Analysis. (Same as LING 544) Survey of major approaches to the analysis of spoken or written discourse including speech act theory, pragmatics, interactional sociolinguistics, ethnography of communication, conversation

analysis, variation analysis and critical discourse analysis.

545-2 to 6 (2 to 3 per topic) Seminar in Anthropological Linguistics. From year to year, the areal and topical coverage of this course will vary, as will the instructors. Students should consult the department about subjects to be covered.

546-3 Language, Gender and Sexuality: Anthropological Approaches. (Same as WGSS 546) This course examines the study of language in society with a particular focus on how linguistic practices are part of the construction of gender and sexual identities, ideologies, social categories and discourses. Anthropological theories applies to the study of language, gender and sexuality will be covered along with a variety of methodological approaches.

551-3 Pragmatics. (Same as LING 551) An investigation of language use in context; this incorporates both social and psychological aspects of language use. Topics to be covered in this course include speech acts; implicature; conversation analysis; and the acquisition of communicative competence by both first and second language learners. Prerequisite: ANTH 500B or LING 505.

554-1 to 4 (1 per semester) Systemic Biology Seminar. (Same as MBMB 554, PLB 554, ZOOL 554) Advanced topics in evolutionary biology including genetics & development, evolutionary ecology, phylogeny, paleontology, biogeography, population genetics, molecular ecology, speciation, molecular evolution, and macroevolution. Topics will vary each semester. Seminar format with group discussions and student presentations. Graded S/U. Special approval needed from the instructor.

556-3 Phylogenetics. (Same as MBMB 556, PLB 556, and ZOOL 556) An advanced introduction to modern methods of phylogenetic inference, emphasizing both theoretical background concepts and numerical approaches to data analysis. Topics include properties of morphological and molecular characters, models of character evolution, tree estimation procedures, and tree-based testing of evolutionary hypotheses. Special approval needed from the instructor.

560-2 to 6 (2 to 3 per topic) Seminar in Comparative Social Organization. From year to year, the areal and topical coverage of this course will vary, as will the instructors. Students should consult the department about subjects to be covered.

562-2 to 6 (2 to 3 per topic) Seminar in the Anthropology of Contemporary Peoples. From year to year, the areal and topical coverage of this course will vary, as will the instructor. Students should consult the department about subjects to be covered.

565-2 to 6 (2 to 3 per topic) Seminar in Culture Change and Development. From year to year, the areal and topical coverage of this course will vary, as will the instructor. Students should consult the department about subjects to be covered.

567-2 to 6 (2 to 3 per topic) Seminar in Anthropological Theory and Method. From year to year, the areal and topical coverage of this course will vary, as will the instructors. Students should consult the department about subjects to be covered.

568-3 to 12 (3 per topic) Seminar in Analytical Methods in Archaeology. Seminar in definition, measurement and description of data in relation to archaeological research problems. From year to year, the topical coverage of this course will vary, as will the instructors. Students should consult the

department about subjects to be offered. Special approval needed from the instructor.

576-2 to 6 (2 to 3 per topic) Seminar in Anthropological Research Design. Supervised training in the preparation of anthropological research designs. Requirements will include completed research proposals involving the relation of data to theory and results in the general sub-areas of archaeological, physical, social and linguistic anthropology. Coverage will vary. Students should consult the department.

580-1 Current Topics in Evolution. (Same as ZOOL 580, MBMB 580) The Evolution Discussion Group meets weekly throughout the year to discuss current evolutionary literature and the research of participants. All students and faculty with an interest in evolutionary biology are welcomed to participate.

581-2 to 6 (2 to 3 per topic) Seminar in Anthropology. From year to year, the areal and topical coverage of this course will vary, as will the instructor. Students should consult the department about subjects to be covered.

585-1 to 12 (1 to 3 per semester) Readings in Anthropology. Guided readings to cover special topics and fill gaps in the student's specialized anthropological background in preparation for Ph.D. candidacy examination, to be arranged with department. Graded S/U. Restricted to doctoral students only. Special approval needed from the instructor.

589A-1 Anthropology for Graduate Students at SIU. Taught in the fall semester, is an introduction to faculty, programs, requirements and resources in the Department of Anthropology at SIU. Expected of all new M.A. and Ph.D. students for first year. One hour per week. Prerequisite: acceptance into anthropology graduate program. Does not count toward M.A./Ph.D. credit hour requirements. Graded S/U only.

589B-1 Introduction to Anthropological Research. Taught in the spring semester, is an introduction to anthropological research with an emphasis on initiating a thesis/dissertation topic. Expected of all new M.A. and Ph.D. students for first year. One hour per week. Prerequisite: acceptance into anthropology graduate program. Does not count toward M.A./Ph.D. credit hour requirements. Graded S/U only.

590-3 Internship. This provides a supervised experience in a professional setting, generally entailing supervisory, editorial, and/or administrative duties. Special approval needed from the instructor.

595-3-6 Field Methods in Ethnology. Anthropological methods of inquiry and documentation of cultures and habitat together with appropriate instruction in the technique of field work such as photography and sound recording. Special approval needed from the instructor.

596-6 to 18 Advanced Field Methods in Archaeology. Advanced, hands-on training in the field in archaeological method and theory. Graduate students will have extended training in supervisory and documentation tasks and roles, in addition to other field training. Students will be expected to be in residence at the field school headquarters off campus for the entire field season. Prerequisite: ANTH 496 or consent of instructor.

597-1 to 12 Fieldwork in Anthropology. To be arranged with department. Graded S/U only.

598-1 to 9 Accelerated Thesis. This course is restricted to students to be accelerated from the M.A. to the Ph.D. program (at the discretion of the faculty). Its purpose is to allow the

student, under the guidance of his/her major advisor, to complete the research paper and other requirements of an M.A. degree. Graded *S/U* only. Special approval needed from the department and departmental offer of accelerated entry to Ph.D. program in Anthropology.

599-1 to 9 Thesis. Restricted to: permission of instructor.

600-1 to 32 (1 to 12 per semester) Dissertation. Special approval needed from the instructor.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Applied Linguistics

(See Linguistics for program description.)

Architecture

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COLLEGE OF APPLIED SCIENCES AND ARTS

Graduate Faculty:

Anz, Craig K., Associate Professor, Ph.D., Texas A&M, 1991; 2009.

Brazley, Michael D., Associate Professor, Ph.D., University of Louisville, 2002; 2004.

Cho, Siwon, Associate Professor, Ph.D., Virginia Tech, 2008; 2009.

Davey, Jon, Professor, M.S., Southern Illinois University Carbondale, 1987; 1981.

Dobbins, John, Associate Professor and *Head*, Master of Architecture program, M. Arch., M. B. A., University of Illinois, 1986; 1995.

González-Torres, Rolando, Associate Professor, *Emerita*, Ph.D., Universidad Politécnica de Cataluña, 2008; 2013.

Kidd, Laura K., Associate Professor, Ph.D., Iowa State University, 1994; 1996.

LaGarce, Melinda, Associate Professor, M.F.A., Texas Technology University, 1972; 1989.

Lee, Seung-Hee, Associate Professor, Ph.D., The Ohio State University, 1998; 2012.

McDonald, Shannon Sanders, Assistant Professor, M. Arch., Yale University, 1992; 2011.

Morthland, Laura, Associate Professor, M.A., University of Oregon, 2003; 2006.

Poggas, Christy, Assistant Professor, *Emerita*, M.S. Ed., Southern Illinois University Carbondale, 1990. B.Arch., University of Arizona, 1975; 2003.

Schwartz, Chad, Assistant Professor, M. Arch, Arizona State University, 2003; 2011.

Smith, Peter B., Associate Professor, M. Arch., University of Illinois, 1980; 2001.

Swenson, Robert, Associate Professor, *Emeritus*, M. Arch, Yale University, 1969; 1999.

Wendler, Walter V., Professor and *Director*, *Emeritus*, Ph.D., University of Texas, 1991, M. Arch, University of California, Berkley, 1975; 2001.

Wessel, Stewart P., Professor, M.F.A., University of North Texas, 1992; 1996.

White, David, Associate Professor, M. Arch, Southern Illinois University Carbondale, 1991; 1998.

Workman, Jane, Professor, *Emerita*, Ph.D., Purdue University, 1982; 1989.

Master of Architecture

The Master of Architecture degree is a first professional degree intended for individuals who have completed a pre-professional undergraduate degree in architecture or architectural studies and requires a minimum of 42 semester hours that can be completed over a 15 month period including a summer, fall, spring and summer semester sequence.

The core of the architecture program is the design studio. In the Graduate program students are exposed to concentrations in community and regional design, technology, theory and

building design. Students are required to take advanced courses in research methods, programming and professional practice. Students receive a rigorous and demanding education that will prepare them for a variety of architectural intern positions.

The focus of the program will develop through the:

- Traditional program strength in technological innovation and practice connected to architectural theory.
- Service and discovery related to the regional and global culture and environment as a unique model and framework for the study of architecture.
- Investigation of the work and legacy of R. Buckminster at Southern Illinois University as it impacts twenty-first century architecture.

The entire undergraduate and graduate curriculum is designed to fulfill National Architectural Accrediting Board (NAAB) requirements and conditions for a professional degree in architecture. The Master of Architecture degree is fully accredited by the National Architecture Accrediting Board (NAAB) and meets educational requirements for licensure in Illinois and other states as well as National Council of Architectural Registration Boards (NCARB) certification requirements.

In the United States, most state registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit U.S. professional degree programs in architecture, recognizes three types of degrees: the Bachelor of Architecture, the Master of Architecture, and the Doctor of Architecture. A program may be granted a 6-year, 3-year, or 2-year term of accreditation, depending on the extent of its conformance with established educational standards.

Master's degree programs may consist of a pre-professional undergraduate degree and a professional graduate degree that, when earned sequentially, constitute an accredited professional education. However, the pre-professional degree is not, by itself, recognized as an accredited degree.

The NAAB grants candidacy status to new programs that have developed viable plans for achieving initial accreditation. Candidacy status indicates that a program should be accredited within 6 years of achieving candidacy, if its plan is properly implemented.

NAAB Conditions for Accreditation, p A-1

Vision and Mission

The SIU architecture graduate program invites students to unleash their potential and join in the exploration, development, and creation of architecture in the heartland of America. It is our vision to be an architectural program of excellence built upon the cultural and environmental heritage of the Southern Illinois region that provides a superior education and produces the highest quality architectural scholarship and research to serve our global communities.

Through our cultural heritage, environmental context and the tradition of integrating emerging technology and innovative practice, the mission of the architecture faculty and students is to explore, create, and develop architecture as a synthesis of design excellence, artistic expression, technology and community involvement.

Goals

- Our graduates are lifelong learners, leading citizens and

professionals in communities throughout the world.

- We provide for the development of individual creativity through the expression of human, social and environmental values.
- We serve our communities through problem solving and creative efforts in the addressing of regional issues.
- We seek to fulfill the vision expressed by Ernest Boyer and Lee Mitgang in Building Community to:
 - Produce architecture that enhances the quality of life of our communities, serves the needs of clients, uplifts the human spirit, preserves the environment, provides social justice and expands aesthetic frontiers.
 - Pursue the scholarship of discovery, integration, application and teaching
 - Provide a curriculum that is liberal, flexible and integrated both within the discipline of architecture and in connections with other disciplines in the design-build process.

Application Requirements and Procedures

A complete application consists of:

1. The Master of Architecture application form
2. Graduate School application
3. Application fee of \$65.00
4. Portfolio
 - Examples of work should include design studio work, professional presentation drawings, and any related expressions that demonstrate the applicant's design and communication abilities. Professional work should include a statement from the employer stating the role of the applicant in the process and product of the work.
 - Preferred sizes: (8 ½" x 11") or (11" x 17"). Use a PDF file.
 - Maximum number of pages: 25
 - Maximum weight: 16 ounces
 - Covers and binding: simple and easy to read
 - Portfolios cannot be returned to the applicant.
5. Three letters of recommendation
6. Official transcripts from all institutions attended
7. Statement of purpose expressing academic and professional career goals and plans

International applicants also need to supply TOEFL (Test of English as a Foreign Language) scores that satisfy the Graduate School requirements and Certification of Finances for Admission to the Graduate College.

Graduate Record Examination (GRE) is not required for the Master of Architecture Program. However, many scholarship and fellowship opportunities do require the GRE. Applicants are encouraged to submit test scores.

Application materials are reviewed by the faculty of the School of Architecture. Each submission is evaluated individually and the decisions are based upon the quality of

the portfolio, the strength of the academic record, the letters of recommendation, professional experience and the commitment and clarity expressed in the letter of intent.

Contact:

John K. Dobbins, Architect
 Assoc. Professor and Head, Master of Architecture program
 875 South Normal
 413 Quigley Hall, MC 4337
 Southern Illinois University Carbondale
 Carbondale IL 62901
 618-453-3734
 Fax: 618-453-1129
 jdobbins@siu.edu

Curriculum Guide

The curriculum has been created to provide a superior architectural education and satisfy NAAB "Student Performance Requirements". All applications will be reviewed to ascertain fulfillment of the educational criteria of the SIU undergraduate program. Any deficiencies will be defined upon acceptance into the program as well as the necessary course requirements to eliminate those deficiencies. Those requirements must be fulfilled prior to completion of the Master of Architecture degree.

The graduate curriculum consists of 42 semester credit hours which must be completed prior to awarding of the Master of Architecture degree.

Summer I Semester

ARC 550	Regional Architecture Studio	6
TOTAL		6

Fall Semester

ARC 500-3	Research Methods and Programming	3
ARC 541-3	Arch. Systems & the Environment	3
ARC 551-6	Comprehensive Architecture Design Studio	6
ARC 591-3	Architectural Professional Practice I	3
TOTAL		15

Spring Semester

ARC532-3	Architectural History III: Non-Western Architecture	3
ARC 552-6	Graduate Architectural Design Thesis I	3
ARC 592-3	Architectural Professional Practice II	6
Elective		3
TOTAL		15

Summer II Semester

ARC 554-6	Design/Thesis II –or–	6
ARC 593-6	Architectural Research Paper –or–	6
ARC 599-6	Thesis	6
TOTAL		6

Courses (ARC)

500-3 Research Methods and Programming. The foundational study of research methods and programming that serve architectural studies. This course investigates the co-application of multiple methodologies for the development of research topics and architectural programs. The conclusion of the course is the definition of an individual thesis project to be completed in the Graduate Program. Restricted to enrollment

in the M. Arch. Program.

501-3 Seminar: Architectural Theory. Seminar devoted to the teaching, investigation and discussion of contemporary architectural issues related to theory. Students have the opportunity to explore a variety of subjects through assigned readings and investigations.

502-3 Architecture Seminar. Study of current trends and topics in architecture. Assigned readings and investigations are completed on approved topics chosen by the student. Students have the option of completing in situ study during the course.

503-3 Environmental Behavior Studies in Architecture. This seminar introduces students of architecture to environmental behavior studies. The course deals with the complex relationships between people and their physical, social, and cultural environments. Students are introduced to common core of theories and methods rooted in the environmental design professions, social and physical sciences, and the humanities.

531-3 Seminar: Architectural History. A seminar devoted to the teaching, investigation and discussion of the history of architecture. Students have the opportunity to investigate historical precedents and the context within which these ideas have developed. The connection to the contemporary architectural setting and current concepts will be developed and discussed.

532-3 Global Traditions in Architecture. Seminar to discuss architecture beyond the tradition of Western civilization. Focus is upon the architecture of Asia, the Middle East and North America. Primitive, pre-industrial vernacular as well as cultural specific high style architecture is included. The course format is: lectures, assigned reading, class discussion and individual research reports.

541-3 Architectural Systems and the Environment. Provides an overview of building technology and systems and the role of building systems performance in providing architectural and human environments and their subsequent impact upon the natural environment. The course builds upon the philosophical ideas of sustainable design and resource consumption tools. Prerequisite: Enrollment in M. Arch. Program. Concurrent enrollment in 551 is required.

550-6 Regional Architecture Studio. Architectural design Studio focused upon regional architecture and planning. The studio addresses regional architectural issues building upon the local culture and design traditions. Restricted to enrollment in the M. Arch. program. Studio fee: \$72.

551-6 Comprehensive Architecture Design Studio. Arch. design studio focused upon comprehensive design of a large-scale urban building as fulfillment of the total integration of architectural systems and design criteria. This course serves as the culmination of the fulfillment of student performance criteria through the integration of all major building and urban systems while addressing the current human, social, and environmental issues. Prerequisite: Enrollment in M. Arch. Program & 550. Concurrent enrollment in 541 required.

552-6 Graduate Architectural Design Thesis I. Initial development of individual design thesis project in a studio setting. The studio will consist of design project or an individual student thesis project as developed in ARC 500-3. Approval of thesis project by graduate faculty is required. Prerequisite: ARC 500 and 551. Restricted to enrollment in M. Arch. Program.

Studio fee: \$72.

554-6 Graduate Architectural Design/Thesis III. A continuation of ARC 552 in the conclusion, presentation and final approval of the individual design/thesis project in a studio setting. This course is taken by students who wish to graduate through the department. Prerequisite: ARC 552. Studio fee: \$72.

555-6 Urban Design & Community. (Same as ARC 451) Study of urban design and community as cultural and spatial development of human settlement patterns. All previous design course experience will be brought to bear on the architectural projects within the context of urban and community criteria. Restricted to major. Studio fee: \$72.00.

556-6 Design VI: Integration. (Same as ARC 452) This comprehensive design studio focuses the knowledge and skills developed in all previous courses on a single project. The course emphasizes the design integration of the building's structural and environmental systems. Restricted to major in architectural studies. Studio fee: \$72.00.

562-3 Analysis & Lateral Forces. (Same as ARC 462) Continuing study of framing materials and systems for buildings using advanced concepts of structural analysis. Included are earthquake resistant structures, wind resistant design, composite beams, plastic theory, statically indeterminate structures, long spans, moment distribution, multi-story structures, and other related topics. Restricted to major.

570-3 Architectural Visualization. This course is designed to give the student a fundamental understanding of the practices of 3D architectural modeling and visualization. Themes emphasized are: 3D modeling; still frame rendering; animation production; image editing and post production. Restricted to enrollment in M. Arch. Program.

581-1 to 12 Special Projects. Investigation of individual problems in architecture under the supervision of a faculty member. Restricted to M. Arch. majors. Special approval needed from the instructor.

582-1 to 6 Special Readings in Architecture. Assigned readings in an area of architecture under the supervision of a faculty member. Restricted to M. Arch. Majors. Special approval needed from the instructor.

583-3 Environmental Design II: Energy & Systems. (Same as ARC/ID 481) The study of the influence of energy, human comfort, climate, context, heating, cooling and water on the design of buildings and sites. The design of passive and active environmental systems and strategies for sustainability. Restricted to major.

584-3 Environmental Design III: Lighting & Acoustics. (Same as ARC 482) This course provides a comprehensive overview of the luminous and sonic environments with emphasis on energy conscious design. Restricted to major.

591-3 Architectural Professional Practice I. Introduction to the organization, management, and practice of architecture as a business and profession. Emphasis is placed on the range of services provided, professional ethics, business management, marketing, contracts and negotiations, design cost analysis/controls, and other aspects of professional practice. Restricted to enrollment in M. Arch. Program.

592-3 Architectural Professional Practice II. The development of the study and discussion of architectural professional practice issues including leadership, legal responsibilities, ethics and

professional judgment. Restricted to enrollment in M. Arch. Program.

593-6 Architectural Research Paper. This course is for students who wish to perform individual research in architecture on an approved topic. Prerequisite: ARC 552. Restricted to enrollment in M. Arch. Program.

599-6 Thesis. Graded *S/U* or *DEF* only. Prerequisite: ARC 552. Restricted to enrollment in M. Arch. Program.

601-1 Continuing Enrollment. For graduate students who have not finished their degree program and who are in the process of working on their thesis, research paper, or capstone project course (ARC 554). Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Art and Design

www.artanddesign.siu.edu/

COLLEGE OF LIBERAL ARTS

Graduate Faculty:

Abdul-Musawwir, Naijar, Professor, M.F.A., Southern Illinois University Carbondale, 1997, Painting.

Abrahamson, Roy E., Associate Professor, *Emeritus*, Ed.D., Columbia University, 1965; 1965, Art Education.

Addington, Aldon M., Associate Professor, *Emeritus*, M.F.A., Cranbrook Academy of Art, 1966; 1967, Sculpture.

Allen, Mont, Assistant Professor, Ph.D., University of California, Berkeley, 2014; 2014, Art History.

Archer, Richard, Assistant Professor, *Emeritus*, M.S., Governor's State University, 1979; 1986, Design.

Belletire, Steven P., Professor, *Emeritus*, B.F.A., University of Illinois, Champaign, 1971; 1997, Industrial Design.

Bernstein, Lawrence A., Associate Professor, *Emeritus*, M.F.A., Cranbrook Academy of Art, 1953; 1962, Drawing and Painting.

Bickel, Barbara., Associate Professor, Ph.D., The University of British Columbia, 2008; Art Education.

Boysen, Bill H., Professor, *Emeritus*, M.F.A., University of Wisconsin, 1966; 1966, Glass.

Briggs, Larry S., Associate Professor, *Emeritus*, B.F.A., University of Oklahoma, 1956; 1985, Visual Communication.

Bukowski, Marie, Professor and *Director*, M.F.A., University of Pennsylvania, 2000; 2013, Painting and Printmaking.

Busch, Larry, Associate Professor, *Emeritus*, M.S., Southern Illinois University Carbondale, 1970; 1970, Design.

Chalmers, Pattie, Associate Professor, M.F.A., University of Minnesota, 2001; 2006, Ceramics.

Deller, Harris, Professor, *Emeritus*, M.F.A., Cranbrook Academy of Art, 1973; 1975, Ceramics.

Feldman, Joel B., Professor, *Emeritus*, M.F.A., Indiana University, 1967; 1973, Printmaking.

Fredrickson, Laurel, Assistant Professor, Ph.D., Duke University, 2007; 2014, Art History.

Gradle, Sally A., Associate Professor, *Emerita*, Ed.D., University of Illinois, Urbana-Champaign, 2004; 2005, Art Education.

Greenfield, Sylvia R., Professor, *Emerita*, M.F.A., University of Colorado, 1967; 1968, Drawing and Painting.

Janssen, Travis, Assistant Professor, MFA, Arizona State University, Tempe, 2007; 2014, Printmaking.

Kim, Sun Kyoung, Associate Professor, M.F.A., University of Illinois, 2007; 2008, Metalsmithing.

Lee, Jiyong, Associate Professor, M.F.A., Rochester Institute of Technology, 2001; 2005, Glass.

Lintault, M. Joan, Professor, *Emerita*, M.F.A., Southern Illinois University Carbondale, 1962; 1973, Fibers.

Lopez, Alex, Associate Professor, M.F.A., Alfred University, 1998; 2006, 3-D foundations/sculpture.

Lopez, Robert Anthony, Associate Professor, M.F.A., University of Illinois, Urbana-Champaign, 2000; 2009, Industrial Design and Communication Design.

Mavigliano, George J., Associate Professor, *Emeritus*, M.A.,

Northern Illinois University, 1967; 1970, Art History.

Mawdsley, Richard W., Professor, *Emeritus*, M.F.A., University of Kansas, 1969; 1978, Metals.

Monteith, Jerry, Professor, M.F.A., Cranbrook Academy of Art, 1978; 1990, Sculpture.

Onken, Michael O., Associate Professor, *Emeritus*, M.A., Northern Illinois University, 1966; 1968, Drawing and Painting.

Palmer, Erin L., Associate Professor and *Associate Director*, M.F.A., Yale University, 1993, Drawing and Painting.

Paulson, Robert L., Professor, *Emeritus*, M.F.A., University of Wisconsin, 1967; 1967, Drawing and Painting.

Pease, Mark, Associate Professor, M.F.A., University of Pennsylvania, 2003; 2009, Digital Art.

Scott, Aaron, Associate Professor, M.F.A., Purdue University, 2008; 2009, Industrial Design and Communication Design.

Shang, Xuhong, Professor, M.F.A., Tyler School of Art, Temple University, 1992; 2008, Painting.

Shay, Edward H., Professor, *Emeritus*, M.F.A., University of Illinois, 1971, Drawing, Painting, and Printmaking.

Sloboda, Stacey L., Associate Professor, Ph.D., University of Southern California, 2004; 2005, Art History.

Smith, Richard E., Professor, M.F.A., Southern Illinois University Carbondale, 1992; 1998, Blacksmithing.

Sullivan, James E., Associate Professor, *Emeritus*, M.A., University of California, Los Angeles, 1965; 1969, Art History.

Sullivan, Milton F., Professor, *Emeritus*, M.A., Columbia University, 1951; 1952, Sculpture.

Walsh, Thomas J., Professor, *Emeritus*, M.F.A., University of Michigan, 1962; 1967, Sculpture.

Youngblood, Michael, Associate Professor, *Emeritus*, Ph.D., University of Oregon, 1975; 1979, Art Education.

Zivkovich, Kay M. Pick, Professor, M.F.A., Southern Illinois University Carbondale, 1973; 1989, Communication design.

In all of its graduate studio programs, the School of Art and Design strives to maintain a vital, creative ambiance in which emerging artists with strong motivation may develop, through intensive studio practice and appropriate scholarly support, a clear, mature, and professional focus to their creative life. The core of any program is the in-depth studio practice of individual studio disciplines and frequent, sustained contact with working professional faculty and fellow students. This work is supported and extended through formal studio course work, studies in the history of art, and through access to the many resources and opportunities inherent in a large multi-purpose university.

M.F.A. Degree Program Description

The School of Art and Design offers graduate studies leading to the Master of Fine Arts degree with a major in art. The student is expected to select an area of emphasis among the following: 2D (Drawing, Painting and Printmaking) Ceramics, Glass, Metals (Blacksmithing and Small Metals) or Sculpture. A program will be planned in consultation with the major professor in that area. Graduates are qualified to enter professional practice as artists or the field of higher education.

Admission

An undergraduate degree in art or art education, or the equivalent in coursework or experience if the undergraduate degree is in another discipline, is required for admission into

the Master of Fine Arts degree program. The student must also submit transcripts of all previous undergraduate work, present a portfolio of digital images and submit letters of recommendation.

Any exception to these requirements must be approved by the faculty in the studio arts and by the Director of the School of Art and Design.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Art and Design. Applicants must pay this fee by credit card.

M.F.A. Degree

A minimum of 60 semester credit hours is required for the Master of Fine Arts degree with a major in art. All hours that are to count toward graduation must have the approval of the student's major adviser in the studio area of emphasis. Students may emphasize the following areas in studio: drawing, painting, printmaking, sculpture, ceramics, glass, metalsmithing/blacksmithing, and design. The length of time required to complete a 60 semester-hour program is usually 5–6 semesters or three academic years. Most graduate students are in residence for at least 4-6 semesters. Programs of residency must have the approval of the student's major adviser. Required hours are distributed as follows: 26 hours in the primary studio emphasis, 12 hours in art history or related subjects, 6 hours in thesis or terminal project work, and 16 hours of elective study of which 9 hours must be in studio disciplines. The remaining hours may be elected from any area within the School of Art and Design or in the University at large.

In addition to the completion of coursework, all candidates for the M.F.A. degree must, during the last semester of academic work, present a graduate exhibition, present a terminal project or a written thesis, and pass an oral examination. The terminal project is a creative activity presented in lieu of the written thesis, and in practice, the graduate exhibition is considered to satisfy the terminal project requirement.

Graduate education in the studio areas of emphasis is expensive, and because of the individual nature of creative work, it is virtually impossible to predict the exact cost for each student. The School of Art and Design provides the faculty and the studio and shop facilities that are necessary to the programs offered, but all other costs, especially materials, that are considered necessary to the successful completion of a graduate program are borne by the student.

M.F.A. Design Concentration

The Master of Fine Arts with a concentration in Design prepares students in the fundamentals of design research, project management, and client-based interdisciplinary design collaborations. This program will afford MFA candidates with opportunities to work collaboratively with undergraduate art and design students, design faculty, and corporate sponsors in applying two and three dimensional design process theory, methods, tools, and skills in a team setting aimed at using design as an innovation change agent. This partnering will contribute to the candidates' ability to cross boundaries of disciplines to be smarter and more creative thinkers that can result in entrepreneurial opportunities and a range of creative positions within industry. The thesis experience will include

an interdisciplinary component, industry collaborator, plus development of a business plan.

Successful MFA candidates will have a range of career path options including, but not limited to, entrepreneurial brand/product development; product/graphic/brand design consulting; teaching at the higher education level; product-service brand management; consulting design team/project management; company design team management; design innovation management; plus hybrid's of these roles. Employment opportunities may also be linked to companies sponsoring thesis projects.

A minimum of 60 semester credit hours is required for this Master of Fine Arts degree concentration. Required hours are distributed as follows; 21 hours in primary studio emphasis, 9 credit hours in art history or related subjects, 9 hours in studio electives, 9 hours in interdisciplinary electives, plus 12 credit hours in thesis, apportioned over two semesters.

Graduate Certificate in Art History

The certificate program in Art History will enable students to develop a broad knowledge of the history of art, become familiar with the discipline's methodology, and acquire training in teaching art history. Graduate students will be able to pursue the certificate program either independently or concurrently with an MFA.

Students enrolled in the certificate program must maintain a GPA of no less than 3.0 in all coursework counting towards the certificate. Maximum time allowed to complete all requirements for the certificate is six years from the date of admission to the program.

Admission

Any student who has completed a bachelor's degree is eligible to apply for admission to the certificate program. Students enrolled in the MFA program may enroll concurrently in the certificate program. They must apply for admission to the program before completing the "major part" of certificate work (50% of credit hours, or 9 hours of art history coursework). Students seeking admission to the certificate program will be required to complete an application form and submit transcripts verifying completion of the bachelor's degree. An application fee of \$20.00 will be assessed to cover administrative costs.

Program Requirements

Students enrolled in the certificate program will be required to complete 21 credit hours of graduate level art history coursework. Of these, 6 credit hours will consist of AD 438, Writing about Art and Design, and AD 537, Teaching Practicum. No independent study (AD 507 Readings in Art History) courses will count towards the certificate coursework requirements. Of the 21 art history credit hours required by the certificate program, 9 can count towards requirements of another graduate degree.

Eligible elective courses:

- AD 407 Art and Archaeology of the Ancient Mediterranean
- AD 417 Medieval Art
- AD 419 Gothic Art
- AD 423 Industrial Design Research and Professional Practice
- AD 427 A-D Renaissance Art

AD 428 Native North American Art
 AD 437 Eighteenth-Century Art
 AD 447 Introduction to Museology
 AD 458 African Arts
 AD 467 Critical Issues in Contemporary Art
 AD 477 United States of America Art of the Thirties
 AD 478 Topics in American Art
 AD 497 A-D Problems in Art History
 AD 498 Art Criticism
 AD 517 Methods and Theory of the History of Art and Visual Culture
 AD 527 19th Century European Art
 AD 597 A-D Graduate Seminar in Art History
 CP 460 Survey of Film History
 CP 470 Advanced Topics in Cinema Studies
 MCMA 550 History of Media Arts and Culture
 MCMA 551 Theory of the Media Arts

At any time during their enrollment in the certificate program, students will be able to petition the art history faculty to take a comprehensive qualifying exam. The exam will be administered at the end of the Fall and Spring semesters on an “as needed” basis. The test will assess the students’ knowledge of art history (pre-history to present), pertinent terms and concepts, and general historical context. It will consist of three parts: slide identification, slide comparison, and a short essay section. A student will have to obtain a passing score on the exam in order to qualify for the Art History Certificate.

Instructional Support Equipment Fee

The School of Art and Design assesses all graduate art majors an instructional support equipment fee of \$10.00 per credit hour; a maximum of 12 credit hours will be charged each for fall and spring semesters and six for summer.

MA in Art History and Visual Culture

The MA in Art History and Visual Culture is an interdisciplinary program training students in the historical analysis of art and visual culture as well as career-enhancing competencies as teachers, scholars, museum professionals and visual resources curators. Courses explore issues in the production, reception, and theory of art from antiquity to postmodernity.

The degree is housed in the Art History Program of the School of Art and Design. Students are also encouraged to take courses in complementary disciplines such as Anthropology, Cinema Studies, English, History, History and Theory of Photography, and other related fields. Students are required to take 30 credit hours, with a minimum of 15 credits earned at the 500 level: 18 hours that will constitute the core requirement (a required course in methods and theory; and five distribution electives, to include courses in pre-1800, post-1800, and design history/theory); 9 hours that will constitute the free electives; and 3–6 hours applied to a Master’s thesis or a comprehensive examination (the student’s choice).

Students are also required to pass a language examination in the reading of a German, a Romance language, or an approved substitute.

Requirements:

I. AD 517; Methods and Theory of the History of Art and Visual Culture (must be passed with a grade of an A or a B).

II. Core Courses (15 hours):

Students may choose from the following courses to fulfill the Core distribution:

AD 407:	Art and Archaeology of the Ancient Mediterranean
CP 470E:	Topics in the History of Photography
ANTH 410H:	African Expressive Culture
ANTH 410N:	Anthropology of Popular Culture
CP 415:	Photographic Criticism and Practice
AD 417:	Medieval Art
AD 419:	Gothic Art
AD 427A-C:	Early Renaissance Art, High Renaissance Art, Special Topics in Renaissance Art
AD 437:	Eighteenth-Century Art
AD 438:	Writing About Art and Design
AD 447:	Introduction to Museology
CP 460:	Survey of Film History
CP 470A:	Advanced Topics in Cinema Studies
AD 467:	Critical Issues in Contemporary Art
AD 477:	United States Art of the 1930’s
AD 478:	Topics in American Art
AD 497A-D:	Problems in Art History
AD 498:	Art Criticism
ANTH 515A:	Seminar in Sociocultural Anthropology
AD 527:	Nineteenth-Century Art
MCMA 550:	History of Media Arts and Culture
MCMA 551:	Theory of Media Arts
MCMA 552:	Seminar: Topics in the History and Theory of Media Arts
*AD 597A-D:	Graduate Seminar in Art History

III. Electives (9 credit hours)

Depending on their area of interest, students may choose graduate course offerings from the above courses and from 500-level course offerings in departments including, but not limited to, Anthropology, Art and Design, Cinema and Photography and the college wide graduate programs in Mass Communication and Media Arts and Media Theory and Research in the College of Mass Communication & Media Arts, English, Foreign Languages, History, Philosophy, and Communication Studies, with prior approval from the Art History Graduate Adviser.

IV. Master’s Thesis or Qualifying Exam (3 credit hours)

In their final semester, students must complete either AD 599: Thesis or AD 596: Master’s Qualifying Exam with a grade of an A or a B.

Courses (AD)

Art studio courses (400-499, 500-598) are directed toward individual research in the student’s major field. Emphasis is placed upon the history, materials, processes and ideas that form the content and experience of the major field. Courses in this department may require the purchase of supplemental materials. Permission of the major adviser in each studio is required for enrollment in studio courses.

400D-3 to 6 Advanced 2-D Studio - Drawing. Individual problem solving emphasizing technique and conceptual

synthesis. Prerequisite: C or better in 6 hours of AD 400B. Advisor approval required for graduate students. Studio fee: \$8 per credit hour. Expenses may exceed \$100 per course.

401D-3 to 6 Advanced 2-D Studio - Painting. Individual problem solving emphasizing technique and conceptual synthesis. Prerequisite: C or better in 6 hours of AD 401B. Advisor approval needed for graduate students. Studio fee: \$4. Expenses may exceed \$100 per course.

402D-3 to 6 Advanced Printmaking I. Independent study in printmaking. Prerequisite: 6 hours of C or better in AD 402B. Special approval needed from advisor for graduate students. Studio fee: \$20 per credit hour enrolled. Incidental expenses may exceed \$50 for each section.

403D-3 to 6 Advanced Sculpture I. Independent study in sculpture. Prerequisite: 6 hours of C or better in AD 403B. Special approval needed from advisor for graduate students. Incidental expenses will be incurred. Studio fee: \$20 per credit hour.

404D-3 to 6 Advanced Ceramics I. Independent study in ceramics. Prerequisite: 6 hours of C or better in AD 404B. Special approval needed from advisor for graduate students. Studio fee: \$40 per credit hour enrolled.

405D-3 to 6 Advanced Metalsmithing I. Independent study in metalsmithing. Prerequisite: 6 hours of C or better in AD 405B. Special approval needed from advisor for graduate students. Studio fee: \$20 per credit hour enrolled. Incidental expenses may exceed \$75 for each section and may be slightly higher for blacksmithing.

407-3 to 9 (3 per topic) Art and Archaeology of the Ancient Mediterranean. (Same as ANTH 430D, CLAS 310, CLAS 310H) The course introduces students to art historical, archeological, and historical approaches to the physical remains of the Ancient Mediterranean. The course can be repeated if offered on different topics in different (e.g. ancient Greece, ancient Rome). The class is occasionally offered overseas.

414D-3 to 6 Advanced Glass I. Students will focus on studio practice and develop a mature body of work. With faculty guidance, students will identify concepts for an intensive level of visual research based on individual interests and commitments. Undergraduate students in this course will focus on creating a body of work for their senior thesis exhibition. Preparation for professional practices and graduation requirements, including individual portfolio presentation, slide portfolio, artist's statement, and senior thesis exhibition. This course is offered to graduate students who are interested in advanced and/or interdisciplinary research using glass. Prerequisite: C or better in 6 hours of AD 414B. Studio fee: \$80 per credit hour enrolled.

417-3 Medieval Art. Medieval art from the Fourth to the Fifteenth Century in Western Europe. Examination of selected art objects in terms of media and techniques, iconography, function and cultural milieu. Field trip required. Documented research paper on an aspect of medieval art required for graduate credit. Prerequisite: AD207A or consent of the instructor.

419-3 Gothic Art. This course will examine the development and dissemination of Gothic art in Western Europe in the High and Late Middle Ages. We will consider a variety of media, including architecture, metalwork, sculpture, manuscript illumination, panel paintings, fresco cycles and small devotional objects. Prerequisite: AD 207B.

423-6 Industrial Design Research and Professional Practice.

This studio course develops the student's ability to conduct in-depth design research and to explore new needs and trends relating design to society. Additionally, students explore professional practice issues of designer/client, specific design business practices, and ethics. Graduate students will contextualize and execute multifaceted, research-driven problems, requirements include: creation/incorporation of design briefs and professional proposals with outcome solutions to include written research documentation. Undergraduates are restricted to senior standing or consent of the instructor, with prerequisite: C or better in AD 363, 383. Satisfies the College of Liberal Arts Writing-Across-the Curriculum requirement. Studio fee: \$50.

424-3 Ceramic Design. Ceramic Design focuses on three-dimensional design principles concerning form, surface, and function. The objective of this course is to serve as an introduction to the basic fundamentals of design through working with the ceramic medium. A series of demonstrations will provide basic exposure to technical aspects related to prototyping, plaster mold-making, slip-casting, glazing, and firing. The ideas and activities presented here are meant to develop facility in visualization, organization, and creative problem-solving; to gain a greater appreciation for the broad visual culture we call art.

427-3 Renaissance Art. This course will introduce students to paintings, sculpture and architecture created in Europe between 1300-1500 for (A) and 1450-1600 for (B) Works of art produced by Giotto di Bondone, Jan van Eyck, Hieronymus Bosch, Jean Fouquet, Albrecht Durer, Leonardo da Vinci, Michelangelo, Parmigianino, and Pieter Breugel will be considered. (A) Early Renaissance; (B) High Renaissance; (C) Selected topics from the Renaissance period. Prerequisite: AD 207B.

428-3 Native North American Art. Arts and material culture of traditional Native North American cultures, including the Northeast, Woodland and Mississippian areas, Plains, Southwest, West, Northwest Coast, Arctic and subArctic. Fiber arts, sculpture, architecture, ceramics, metals, beads, role of the arts. St. Louis Art Museum and Cahokia Mounds required field trips.

437-3 18th Century Art. This course examines the art, architecture, and material culture of Europe and the United States from 1680 to 1815. The course will situate Baroque, Rococo, and Neo-Classical styles within their social and philosophical contexts. Prerequisite: Art 207B or C or consent of the instructor.

438-3 Writing About Art and Design. This course seeks to provide undergraduate and graduate students with the skills they need for writing both short critical essays and substantial research papers on the visual arts. It introduces students to basic research methods and to theoretical approaches that inform writing about the arts. The course is required for art history majors and is strongly recommended for incoming graduate students in art. Satisfies the College of Liberal Arts Writing-Across-the-Curriculum requirement. Prerequisite: 207A,B,C or consent of the instructor.

442-3 Moving Image Art. Project-based studio art course focusing on broadening the range of digital imaging through integration of multi-media elements including animation,

video, and sound. Prerequisite: AD 219. Studio fee: \$20.

447-3 Introduction to Museology. A survey of museum and gallery techniques (emphasis upon practical exhibit development) which will involve answering questions concerning contractual agreements, taxes, insurance, packing, shipping, exhibit design and installation, record systems, general handling, public relations and sale of art works directed toward problems encountered by the artist outside the privacy of the studio.

452-3 Graphic Design II. Multifaceted problems with emphasis on continuity of design in more than one medium or format. Client-based projects, environmental graphics and identity issues in design. Professional proposals and portfolio preparation. Graduate student requirements include multifaceted problems incorporating design briefs/professional proposals with outcome solutions to include written research documentation, no text requirements. Satisfies the College of Liberal Arts Writing-Across-the-Curriculum requirement. Studio Fee: \$30.

458-3 African Arts. Covers a broad range of the arts primarily of west and central Africa, as well as north, south, and east Africa: includes sculpture, masking and performance, body decoration and textiles, architecture. Shows how arts are used in the daily life of traditional village societies in these areas.

467-3 Critical Issues in Contemporary Art. An examination of the style and meaning of contemporary art in relation to the current political, social and cultural issues. Will include visual arts, architecture, and communications media. Prerequisite: AD 207A and B or consent of instructor.

472-3 Graphic Design III. Special study in current communication design topics. Selected topics will vary with emphasis on studio problems and concept development. Applied problems in advanced digital technologies may include interaction/motion and/or web design. Portfolio preparation. Graduate student requirements: Prepare and present a paper on a specific digital technology, interaction, motion, or web design topic of their choosing. Studio Fee: \$30.

477-3 United States Art of the 1930s. This course situates United States art of the 1930s within the society that produced it, addressing such issues as the Great Depression, gender and race relations, immigration, the farm crisis, social realism, regionalism, labor relations and urbanism. The role that government agencies played in this era will be a particular focus of attention. Media discussed include painting, sculpture, architecture, design, crafts, photography and film. Field trips may be required. Prerequisite: 207C or consent of the instructor.

478-3 Topics in American Art. This course deals with selected topics in the history of both elite and popular art of the Americas, with a focus on the art of the United States. Topics vary, but generally will include the study of architecture, design, crafts, photography and film as well as, or instead of, painting and sculpture. Field trips may be required. Prerequisite: 207C or consent of the instructor.

497-3 to 6 (3 per topic) Problems in Art History. A close examination of selected categories of works of art from various periods, media and cultures as illustrative of particular art historical problems. Topics will vary and include (A) Portraiture. (B) Landscape and still life. (C) Narrative. (D) Other selected topics. Sections A through C may be taken

only once each, section D may be repeated as topics vary. Art historical perspectives to include formal analysis, iconography, art theory, social history, connoisseurship. Prerequisite: AD 207A, 207B, and 207C.

498-3 Art Criticism. The course will familiarize students with history, methodology and contemporary practice of art criticism through close reading and comparative analysis of key texts. It will also provide students with writing, and critical and analytic skills necessary for writing effective art criticism. Field trip required. Prerequisite: AD 207 or consent of instructor.

499-1 to 21 Individual Problems. Art studio course directed toward individual research in the student's major field. Emphasis is placed upon the history, materials, processes and ideas that form the content and experience of the student's major field. Designed to adapt to students' individual needs in problem research. Restricted to senior standing in the School of Art and Design. Prerequisite: an overall 3.0 GPA. Special approval needed from the instructor.

500-3 to 21 Advanced Drawing II. A studio directed toward individual research in the student's major field. Emphasis is placed upon the historical materials, processes and ideas that form the content and experience of the student's major field. Studio fee: \$25. Special approval needed from the adviser.

501-3 to 21 Advanced Painting II. Art studio course directed toward individual research in the student's major field. Emphasis is placed upon the history, materials, processes and ideas that form the content and experience of the student's major field. Special approval needed from the adviser.

502-3 to 21 Advanced Printmaking II. Advanced studio course in printmaking directed toward individual research in the student's choice of print media. Emphasis is on the processes, which lead to the formation of personal content. Studio fee: \$20 per credit hour enrolled. Special approval needed from the adviser.

503-3 to 21 Advanced Sculpture II. Advanced studio course based upon focused individual research in the student's chosen media.. Students develop a personal aesthetic in relation to the field of sculpture through technical accomplishment, intensive output, and engagement in rigorous critique. Incidental fees may exceed \$100. Studio fee: \$20 per credit hour. Special approval needed from the adviser.

504-3 to 21 Advanced Ceramics II. Art studio course directed toward individual research in the student's major field. Coursework is designed to assist the student's discovery of ceramic form and content as applied to personal artistic expression. Emphasis upon the development of creative studio research techniques and seminar-type experiences exploring historical and contemporary issues as they relate to ceramic art. Studio fee: \$55 per credit hour enrolled. Incidental expenses may exceed \$50. Special approval needed from the adviser.

505-3 to 21 Advanced Metalsmithing II. Art studio course directed toward individual research in the student's major field. Emphasis is placed upon the history, materials, processes and ideas that form the content and experience of the student's major field. Studio fee: \$20 per credit hour enrolled. Special approval needed from the adviser.

507-3 to 6 (3,3) Readings in Art History. Individual assistance and investigation to discover new meaning and involvement in graduate studio work through the literature of art.

509-3 Artistic Inquiry, Histories & Philosophies of Art Education. Students develop an understanding of the major theoretical and philosophical issues in art education and develop a personal philosophy of art education. Requirements include reading, writing, research, discussion, and a group exhibition.

514-3 to 21 Advanced Glass II. An advanced glass course intended to increase the student's knowledge of the potential of glass as a medium of creative expression and to refine studio skills associated with the material. Coursework will include the investigation of historical and contemporary solutions to aesthetic problems related to the medium. Studio fee: \$80 per credit hour enrolled. Special approval needed from the adviser.

517-3 Methods and Theory of the History of Art and Visual Culture. This course introduces graduate students to the history of the disciplines of art history and visual culture, examining the assumptions and methods that have guided definitions, analyses, and critiques of art and visual culture. This course is required of students in the MA program in art history and visual culture.

518-3 Curriculum Building with Art. Prepares students to organize art resources, materials, and concepts into effective art learning experiences. Requirements include readings and discussions on contemporary curriculum, the development of a differentiated unit plan with assessment along with service learning experiences in the field.

527-3 19th Century European Art. The course will investigate the evolving discourse of modernity in the context of the 19th century European art. It will trace the origins and development of such key modernist ideas as originality, uniqueness, non-conformity, avant-garde, and abstraction. The discussion of specific artistic trends, from Neo-Classicism and Romanticism in the first half of the century to Realism, Impressionism, Post-Impressionism, and Symbolism in the second half, will be framed by examination of the social milieu and the changing conditions of art-making and art-selling. In particular, the course will examine development of privately owned art galleries, shift from academic to studio based art education, as well as growing importance of the city and the urban experience.

528-3 Artistic Growth of Children. Prepares students to understand the artistic growth of the learner (0-12 years) through readings, discussion, and studio practice. Areas of focus include teaching strategies and methods and lesson plan development in conjunction with clinical field experiences and/or service learning. Studio fee: \$45.

537-3 Teaching Practicum in Art History. Introduces student to pedagogical methods relevant to teaching art history. Students enrolled in the practicum will serve under the close supervision of the art history faculty as discussion leaders for one section of the Art and Design 207 sequence. Practicum students will attend the Art and Design 207 lectures and participate in a weekly teaching workshop, which will address topics such as the development of course syllabi and assignments, grading criteria, classroom policies and teaching strategies. Prerequisite: Art History certificate program and/or Special approval from the instructor required.

538-3 Artistic Growth of Adolescents and Adults. Prepares students to understand the artistic growth of the learner through readings, discussion, and studio practice. Areas of

focus include teaching strategies and methods and lesson plan development in conjunction with clinical field experiences. Studio fee: \$45.

547-3 Survey of 20th Century Art. A survey of the major developments in painting, sculpture, architecture and other areas of the visual arts from the late 19th century to the end of the 20th. These developments are studied in relation to other significant cultural, political, scientific and philosophical events and ideas. (A) covers late 19th to mid-20th century art and culture. (B) covers the middle to the end of the 20th century.

548-3 Art for Classroom Teachers. A studio-based course that includes reading and discussion for non-art majors. Especially applicable to early childhood, elementary, inclusive, and special education programs. Introduction to uses and applications of art media, approaches to teaching art, artistic awareness, adaptation, and creative expression.

557A-C-3 to 9 (3 per topic) Topics in Design History, Theory and Criticism. This course addresses selected topics in the history, theory and criticism of design. (A) History of Design, 1400-1850; (B) History of Design, 1850-Present; (C) Selected Topics.

558-2 to 9 Seminar in Art Education. Topics may include research, curriculum development, issues in the field, and applied studio practices. The course will include reading, investigation of a research problem, and presentation of research findings.

583-3 Practicum in Industrial Design. Advanced and comprehensive product design projects focusing on innovation and user needs. Projects may include corporate sponsors and/or interdisciplinary teams. Students will integrate research and 2D and 3D process documentation with additional focus on human factors and product interface. Undergraduates: Course parallels work in AD 363 and must be taken concurrently. Prerequisites: C or better in AD 313 and AD 323. Concurrent enrollment in AD 363. Graduates: Prepare and present a paper on a specific innovation, user needs, interdisciplinary teams, or collaboration topic of their choosing. Graduate students will serve as design directors for the client-based projects conducted by the undergraduate students in the class. Studio Fee: \$60.

596-3 Exam in Art History and Visual Culture. A comprehensive exam on the history, methods, and theory of the history of art and visual culture. Special written approval needed from primary and secondary advisers.

597A-D-3 to 12 (3 per topic) Graduate Seminar in Art History. A close examination of the history of art and visual culture from various periods and regions. Topics will vary and include (A) Medieval Art (B) Early Modern Art (C) Modern Art (D) other selected topics. Each section may be repeated for credit as topics vary. Restricted to graduate status or consent of instructor.

599-3 to 6 Thesis. A thesis course that is directed toward individual research in the student's major field. Emphasis is placed upon the development of each student's approach to his/her professional practice within the context of the appropriate studio, art history/visual culture, or design field requirement set.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis or research paper. The student must have completed a minimum

of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Behavior Analysis and Therapy

(See Rehabilitation Institute for program description)

Biological Sciences

<http://www.biologicalsciences.siu.edu/>

COLLEGE OF SCIENCE

The biological sciences program provides broad interdisciplinary graduate training in biology leading to the Master of Science degree. This interdisciplinary program utilizes the faculty, facilities and courses of the Departments of Microbiology, Physiology, Plant Biology and Zoology. The program is designed for those students who desire a broad-based curriculum rather than an in-depth concentration in only one of the biological sciences.

Requirements for Admission

All applicants must submit an application to the biological sciences program. Applicants must meet the minimal requirements of the Graduate School before being considered for admission to Biological Sciences. A completed application includes the program application form, three letters of recommendation, and transcripts of all previous college credit.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Biological Sciences. Applicants must pay this fee by credit card.

In addition to Graduate School admission requirements, applicants must hold a bachelor's degree in a life science discipline. Specific options and concentrations may have additional prerequisites, as noted below.

Application forms are available online at <http://gradschool.siu.edu/applygrad/index.html>.

Non-Thesis Option

Admission requirements: 37 semester hours of undergraduate courses distributed among any three of the biological science areas (plant biology, microbiology, physiology and zoology); organic chemistry with laboratory; physics; statistics. Applicants deficient in these background areas may be admitted, but any deficiency must be successfully completed before the third semester of registration in the program.

Advisement: No later than the end of the first semester of registration in the program, the student must arrange with a faculty member in one of the four biological science departments to serve as the research adviser. Following selection and approval of the adviser, an advisory committee is to be recommended to the director of the Biological Sciences Program for approval by the dean of the Graduate School. This committee shall consist of at least three members, each from a different biological science department, with the research advisor serving as chair. A program of course work must be approved by the advisory committee and filed with the director no later than the eighth week of the second semester of registration in the program. Any deviation from the course work program during the student's tenure must be approved by the advisory committee and filed with the director. A proposal for the research paper must be approved by the advisory committee and filed with the director no later than the end of the second semester of registration.

Graduation requirements include a total of 40 semester hours of 400- or 500-level courses with the following provisions:

1. A minimum of 26 semester hours of formal graded courses in the biological sciences required with no less than eight semester hours including one 400- or 500-level laboratory course in each of three of the biological sciences departments.
2. At least 15 semester hours of the total required must be at the 500 level.
3. At least one semester of seminar in each of three of the biological science departments must be attended for credit.
4. An overall 3.0 grade point average ($A = 4.0$) must be maintained with no course in which the grade is less than a *C* counting toward the degree requirements.
5. A research paper is required demonstrating the ability to collect and analyze data and to report interpreted results in a scientific manner. A library research problem is acceptable, but must include an original contribution of analysis and interpretation. No less than three nor more than six semester hours of "Research" may be counted for credit in meeting requirements. (*Only those courses listed as "Individual Research", Introduction to Research", etc. may be taken for credit. "Thesis Research" may not be used for this requirement.*)
6. A final oral examination is required, consisting of two parts:
 - a. a public presentation of the research paper and
 - b. a closed session of inquiry by the student's Research and Advisory Committee.

MEDPREP Concentration (Non-Thesis)

Admission requirements: Each student must apply and be accepted to the MEDPREP program in the SIU School of Medicine.

Advisement: Students are advised by MEDPREP faculty in the SIU School of Medicine. Advisement arrangements are made immediately after admission.

Graduation requirements include a minimum of 47 semester hours of 400- or 500-level courses with the following provisions:

1. A minimum of 20 semester hours of formal course work in the biological sciences and 12 hours of formal coursework in MEDPREP.
2. At least 15 semester hours of the total required must be at the 500 level.
3. A minimum of 12 semester hours of course work in MEDPREP (6 of those hours to be completed during the summer prior to matriculation into the Biological Science program.)
4. An overall 3.0 grade point average ($A = 4.0$) must be maintained with no course in which the grade is lower than a *C* counting toward the degree requirements.

Thesis Option

Admission requirements: 37 semester hours of undergraduate courses distributed among any three of the biological science

areas (plant biology, microbiology, physiology and zoology): organic chemistry with laboratory; physics; statistics. Applicants deficient in these background areas may be admitted, but any deficiency must be successfully completed before the third semester of the registration program.

Advisement: No later than the end of the first semester of registration on the program, the student must arrange with a faculty member in one of the four biological science departments to serve as the research adviser. Following selection and approval of the adviser, an advisory committee is to be recommended to the director of the Biological Sciences Program for approval by the dean of the Graduate School. This committee shall consist of at least three members, each from a different biological science department, with the research advisor serving as chair. A program of course work must be approved by the advisory committee and filed with the director no later than the eighth week of the second semester of registration in the program. Any deviation from the course work program during the student's tenure must be approved by the advisory committee and filed with the director. A research proposal for the thesis must be approved by the advisory committee and filed with the director no later than the end of the second semester of registration.

Graduation requirements include a total of 30 semester hours of 400- or 500-level courses with the following provisions:

1. A minimum of 21 semester hours of formal graded courses in the biological sciences is required with no less than six semester hours coming from each of three of the biological science departments.
2. A least 15 semester hours of the total required must be at the 500 level.
3. At least one semester of seminar in two of the four biological science departments must be attended for credit.
4. An overall 3.0 grade point average ($A = 4.0$) must be maintained with no course in which the grade is less than a *C* counting toward the degree requirements.
5. A thesis embodying original research is required and may be counted for not less than three nor more than six semester hours of credit.
6. A final oral examination is required consisting of a public presentation of the thesis research and a closed session of inquiry by the student's research and advisory committee.

Courses (BIOL)

409-3 Developmental Biology. Basic principles and processes of embryonic development including contemporary research on molecular, cellular and genetic mechanisms of differentiation and morphogenesis; selected plants and invertebrate and vertebrate animals will be considered. Prerequisite: BIOL 305 with a grade of *C* or better.

500-3 Contemporary Biology for Teachers. An introduction to fundamental biological concepts. Emphasis is placed on exploring plant and animal model systems using contemporary methodologies. Examples of biological processes will be covered from genomics to ecosystems. Prepares teachers to introduce biological principles and innovative approaches to understanding

biological systems in the classroom. Prerequisite: SCI 210 A & B or equivalent.

601-1 Continuing Enrollment. For students who have not finished their degree programs and who are in the process of working on their dissertations, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any course is not permissible. Graded *S/U*. Prerequisite: minimum hours as stated above.

Biomedical Engineering

<http://www.engr.siu.edu/biomed/>

COLLEGE OF ENGINEERING

Master of Science (MS) and Master of Engineering (ME) in Biomedical Engineering

Academic Objectives

The proposed program, consistent with the mission and priorities of the University, is designed to achieve the following academic objectives:

- To provide high quality education in the field of biomedical engineering and to prepare the graduates for successful and rewarding employment as engineers or for continuing their education through the doctoral level.
- To provide the students with the training necessary to successfully apply the fundamental concepts and methods of biomedical engineering to selected areas of employment or research and development.
- To enhance the research environment and productivity of the College of Engineering, and all other units participating in the program, for the benefit of the students.

Admission Requirements

Admission to the program requires a Bachelor of Science degree in Engineering Sciences, or a related field with a GPA of 3.25 / 4 or higher. Applications for admission must include the following: A statement of interest, transcripts, GRE scores, three reference letters and TOEFL score (where appropriate), as required by the Graduate School. The application fee for all applicants, and any other documentation specifically required for international students will be in accordance to the requirements of the Graduate School. Admission to the program is made by the Dean of Engineering (or his designee) upon recommendation by the Biomedical Engineering (BME) Program Committee.

Curriculum

To achieve the program's academic objectives and to provide a diverse student body with the opportunity to enroll in the program, the curriculum is structured in three modules as follows:

Module 1.

Biomedical Engineering Foundation 12 Semester Credit Hours

This module is required for all biomedical engineering students and is designed to provide the background necessary for all areas of specialization offered by the program. The module consists of six hours of analytical foundation and six hours of science foundation. The analytical foundation consists of the following courses:

BME 501	Statistics for Biomedical Engineers	3 hours
ENGR 521	Probability and Random Variables	3 hours

Students that do not have the prerequisite knowledge to enroll in these courses may be admitted to the program with the requirement to take and successfully complete the necessary additional mathematics background courses.

The science foundation requires at least six hours selected from the following courses offered by the Departments of Physiology and Chemistry and Biochemistry.

PHSL 410A	Mammalian Physiology
PHSL 410B	Mammalian Physiology
CHEM 444	Intermediate Organic Chemistry
CHEM 451	Biochemistry

The selection of the science courses must be approved by the BME Program Coordinator based on the student's academic background and desired area of specialization. The courses above are expected to be selected most of the time. However, with the approval of the program coordinator, students may select other science courses that better complement their background or better serve their area of interest. The requirement for six hours of science will be waived for students with Bachelor of Science degree in Biomedical Engineering, however, these students will be expected to take three hours of additional engineering courses to meet the requirements of the Graduate School for MS degrees.

Module 2.

Biomedical Engineering Concentration 12 Semester Credit Hours

This module includes the 500-level BME courses and 500-level courses that are related to biomedical engineering and are being offered by different units on Campus. The program offers the following five areas of concentration:

1. Bioinformatics and Computational Medicine
2. Modeling and Simulation of Biomedical Processes
3. Biomedical Imaging
4. Biomedical Instrumentation
5. Biomechanics and Biomaterials

For each of the concentrations above, there is an approved list of recommended 500-level courses (BME and related courses offered by different units). The approved course lists for the five concentrations are shown in Table 1. The students, normally, are expected to select all twelve hours from one of the concentrations. With the approval of their advisor, however, students may select nine hours from the concentration only, and three hours as a free elective. Finally, with the approval of the Program Coordinator, students may select any combination of courses, depending on their background or their specific interests. In all cases, at least six hours must always be selected from BME courses.

Table 1.
Recommended Courses for each of the Five BME Concentrations

Concentration 1	Concentration 2	Concentration 3	Concentration 4	Concentration 5
BME 531	BME 536	BME 531	BME 533	BME 535
BME 532	BME 537	BME 532	BME 534	BME 539
BME 535	BME 538	BME 533	BME 535	BME 540
BME 537	BME 541	BME 534	BME 537	BME 541
ECE 542	ECE 523	ECE 542	BME 538	BME 542
ECE 552	ECE 528	ECE 558	BME 541	ME 504
ECE 555	ECE 563	ECE 568	ECE 523	ME 509
ECE 568	ECE 584	ECE 574	ECE 528	ME 531
ECE 572	CS 501	ECE 578	ECE 564	ME 538
ME 565	PLB 524	ME 504	ECE 565	ME 553
PSYC 514	PSAS 571	CHEM 536	ECE 566	ME 562
PSYC 516	MBMB 520	CHEM 537	ECE 574	ME 564
PHYS 531	MBMB 530	CMST 501	ME 545	ME 565
PHYS 550	MBMB 531	CDS 519	ME 565	ME 566
PSAS 571	PHYS 550		ENGR 530	ENGR 530
ME 577	ZOOL 573		ENGR 540	ENGR 540
MBMB 556	ME 565		CS 501	PSYC 514
MBMB 562	ME 577		CMST 501	PSYC 516
	PSYC 514		CDS 519	ME 577
	PSYC 516			PE/KIN 505

Module 3.
Biomedical Research or Capstone
Design 9 Semester Credit Hours

Master of Science Option (MS)

For the students seeking a Master of Science Degree in Biomedical Engineering, this module consists of the following:

BME 599	Thesis	6 hours
BME 598	Biomedical Engineering Seminar	2 hours
BME 597	Biomedical Research Ethics	1 hour

All requirements and regulations regarding the Thesis (as is the case with all the other Master's degrees in traditional engineering disciplines) are consistent with the relevant policies and procedures of the Graduate School published in the graduate catalog. One hour of Biomedical Engineering Seminar BME 598 must be taken in the first semester of study to serve as introduction to biomedical engineering.

Thus, students with BS degrees in traditional engineering disciplines or computer science are expected to complete the requirements of the program with thirty-three hours. Students with BS degree in biomedical engineering will require thirty hours. For students with BS degrees in other than engineering disciplines, it is possible that more than thirty-three hours will be needed, depending on the background and interests of the student. This will be assessed, for each student individually, at the time of admission.

Master of Engineering Option (ME)

For the students seeking a Master of Engineering Degree in Biomedical Engineering, this Module consists of the following:

BME 592	Capstone Design	3 hours
BME 598	Biomedical Engineering Seminar	2 hours
BME 597	Biomedical Research Ethics	1 hour
	Elective Course	3 hours

BME 592, Capstone Design, must involve substantial design in a biomedical engineering field and must be concluded with a technical report. The report both in terms of technical content and presentation must be approved by a three member faculty committee appointed and chaired by the faculty member who directed the project. One hour of Biomedical Engineering Seminar BME 598 must be taken in the first semester of study to serve as introduction to biomedical engineering. For students with BS in engineering the Elective Course must be at the 500-level if an Engineering course, otherwise it could be at the 400-level. For students with BS in Science the Elective Course must be taken at the 500-level if a science course, otherwise it could be at the 400-level. In any event, the Elective Course must be approved by the program coordinator.

Thus students with BS degrees in traditional engineering disciplines or computer science are expected to complete the requirements of the program with thirty-three hours. Students with BS degree in biomedical engineering will require thirty hours. For students with BS degrees in other than engineering disciplines, it is possible that more than thirty-three hours will be needed, depending on the background and interests of the student. This will be assessed, for each student individually, at the time of admission.

Program Administration and Student Advisement

The BME Program Committee consists of six faculty members (designated by their respective deans), one from the School of Medicine, one from each of the Colleges of Science and Agricultural Sciences and three from the College of Engineering. The Dean of Engineering appoints the BME Committee Chair and Program Coordinator.

The Program Committee, in addition to recommending on admissions, reviews the program, conducts the outcomes assessment process and makes recommendations for the continuous improvement of the program. The Program Coordinator will be responsible for advising new students and assisting them with their initial plan of study. The Program Coordinator acts as graduate advisor to all students until a faculty advisor is assigned to them, and is responsible for the day-to-day operation of the program.

For any issue not specifically addressed, such as residency requirements, time limits, credit transfer, etc., please refer to the rules and regulations of the Graduate School, published in the graduate catalog.

Program Outcomes

- The graduates from the MS and ME programs in Biomedical Engineering are expected to develop and demonstrate the following abilities:
- To successfully apply analytical methods (especially probability and statistics) to biomedical engineering problems.
- To successfully apply engineering methods, including modeling, simulation and design to biomedical problems.
- To communicate in clear and concise technical language and to effectively present their research or design results.
- To understand the basic concepts, tools and methodology of research. This will help them in successfully pursuing doctoral studies.

Courses (BME)

485-3 Cellular and Molecular Biomechanics. (Same as ME 485) Mechanics at the micron and nanoscale level relevant to living cells. Molecular forces, bond dynamics, force induced protein conformational changes. Structural basis of living cells; contractile forces, mechanics of biomembrane, the nucleus, the cytoskeletal filaments- actin, microtubule, intermediate filaments. Active and passive rheology techniques; microrheological properties of the cytoskeleton. Active cellular processes such as cell adhesion, cell spreading, control of cell shape, and cell migration. Discussion on the experimental techniques including single molecule approaches to understand these key cellular processes. Discussion on theoretical models that predict these cellular processes and their limitations. Introduction of Mechanobiology. Prerequisites: ENGR 350A or 350B with a minimum grade of C or better; or graduate standing.

501-3 Statistics for Biomedical Engineers. Theoretical introduction to the basic principles of statistical modeling and estimation focusing on biomedical engineering applications such as genetics and genetic-related disorders. Prerequisite:

PHSL 410A or consent of instructor.

531-3 Biomedical Optical Diagnostic. Theoretical and experimental principles of optically based diagnostic systems; emphasis on generating quantitative descriptions of biochemical and biophysical interactions of optic systems as applied to medical diagnostics and sensing. Spectroscopy is also covered. Restricted to graduate standing. Special approval needed from the instructor.

532-3 Biomedical Imaging. (Same as ECE 467 and ECE 567) This course is designed to provide students with a working knowledge of the theoretical and experimental principles underlying the major medical imaging systems including CT, MRI, Ultrasound, and X-ray. Prerequisite: ECE 355 or consent of instructor. Lab fee: \$30 to help defray cost of software licenses and equipment.

533-3 Speech Processing. (Same as ECE 533) Fundamentals of speech production system, signal analysis of speech, speech coding, linear prediction analysis, speech synthesizing, and speech recognition algorithms. Prerequisite: ECE 468 or consent of instructor.

534-3 Biomedical Sensors and Measurements. Design and evaluation of sensors with application in biomedical engineering. Instrumentation and Techniques for measurements related to biomedical applications. Prerequisite: PHSL 410A, CHEM 444, or consent of instructor.

535-3 Information Processing in Biomedical Engineering. Methods for evaluating different approaches in signal processing systems for biomedical applications; provides familiarity with the variety of exciting software and hardware systems. Prerequisite: PHSL410A, CHEM444, or consent of instructor.

536-3 Biomedical Signal Modeling. (Same as ECE 534) The nature of biomedical signals. Electricity in living tissue. Biomedical signal processing and modeling. Modeling and stimulation of biomedical systems. Prerequisite: ECE 355 with a minimum grade of C. Restricted to enrollment in ECE program or consent of instructor.

537-3 Embedded Microprocessor System Design. Design, analysis, and evaluation of microprocessor-based systems for biomedical implementation. Prerequisite: ECE424 or consent of instructor.

538-3 Medical Instrumentation: Application and Design. (Same as ECE 438 and ECE 538) Basic concept of medical instrumentation, basics sensors and principles, amplifiers, biopotential electrodes, blood pressure and sound, measurement of respiratory system, chemical biosensors, cellular measurement, nervous system measurements, magnetic resonance imaging. Prerequisite: ECE 355, or equivalent. Lab fee: \$45 to help defray cost of software licenses and equipment.

539-3 Biomechanics I. Introduction to mechanical behavior of biological tissues and systems, influence of material properties on the structure and function of organisms, methods for the analysis of both rigid body and deformational mechanics with application to include biological tissues such as bone, muscle, and connective tissues. Prerequisite: ME470 or consent of instructor.

540-3 Biomechanics II. Advanced topics in Biomechanics focusing on design, development, and evaluation of artificial organs. Prerequisite: ME470 or consent of instructor.

541-3 Diagnostic Ultrasound Physics. (Same as ECE 539) Propagation of ultrasonic waves in biological tissues; principles of ultrasonic measuring and imaging instrumentation; design and use of currently available tools for performance evaluation of diagnostic instrumentation; biological effects of ultrasound. Prerequisite: Modern physics, calculus & Fourier analysis or consent of instructor.

542-3 Biomaterials. This course addresses the bulk and surface properties of biomaterials used for medical applications. Artificial Organs and Tissue Engineering are included. Analytical techniques pertinent to biomaterial evaluation, and testing. Prerequisite: ME410 or consent of instructor.

565-3 Finite Element Analysis. (Same as CE 551) Finite element analysis as a stress analysis or structural analysis tool. Derivation of element stiffness matrices by various means. Application to trusses, plane stress/strain and 3-D problems. Dynamic and material nonlinearity problems. Restricted to graduate standing in engineering or consent of instructor.

577-3 Bioprocess Engineering. (Same as ME 577) The course objective is to introduce bioprocessing concepts to ME and BME students. This will introduce the idea of designing a system to achieve a biological reaction objective. It will have content in pharmaceutical production, production of enzymes, and other byproducts, research involving cell culture reactors, pharmacokinetics, and other bioprocessing. Special approval needed from the instructor.

592-3 to 6 Biomedical Capstone Design. Individual advanced project, with heavy emphasis on design, selected by the student and approved by his advisor. The project must be strongly related to biomedical engineering. This project normally will be equivalent to three credit hours. However, with the approval of the BME program coordinator, the project could be equivalent to a maximum of six credit hours. Special approval needed from the instructor.

593-3 Advanced Topics in Biomedical Engineering. Lectures on advanced topics of special interest to students in various areas of biomedical engineering. This course number is used to test new experimental courses in Biomedical Engineering. Special approval needed from the instructor.

596-1 Introduction to Biomedical Engineering. (Same as ECE 596) Introduction and orientation to the biomedical engineering program. Topics to be discussed include: History and scope of the Program, curriculum, required courses, elective courses, thesis and non-thesis options, graduate committee formation, research areas, monitoring academic progress, financial assistance and discussion of BME-related topics that involve math, chemistry, biology, and engineering. Restricted to: Enrollment in BME or ECE program or instructor consent.

597-1 Biomedical Research Ethics. (Same as ECE 597) Series of lectures from distinguished speakers, from academia, industry and government, regarding ethical issues associated with biomedical research and development. Graded S/U or DEF only. Restricted to: Admission to BME program.

598-2 (1,1) Biomedical Seminar. Must be taken in two semesters, one credit hour per semester. The first hour must be taken during the student's first semester of study. The intent is to provide an introduction to biomedical engineering through a series of lectures from speakers, from academia, industry and government, regarding biomedical engineering.

The second hour will be the traditional graduate seminar for the biomedical engineering program. Prerequisite: Admission to BME program.

599-1 to 6 Thesis. Students are eligible to register for thesis when they have completed Module 1 of the BME program and the approval of the instructor who will act as thesis advisor. Prerequisite: Completion of Module 1 coursework and consent of thesis advisor.

601-1 Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of their thesis or capstone design course. The student must have completed all other course requirements to be eligible to register in this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only. Prerequisites: Completion of course work except BME 592 or 599.

Business Administration

www.business.siu.edu

E-Mail: cobgp@business.siu.edu

COLLEGE OF BUSINESS

The graduate faculty, consisting of members of the School of Accountancy and the Departments of Finance, Management, and Marketing, offers graduate work leading to the Master of Business Administration degree, the Master of Accountancy degree, and the Doctor of Philosophy degree.

Graduate Faculty in Accountancy:

See under the major heading for the program in Accountancy

Graduate Faculty in Finance:

Deng, Saiying, Assistant Professor, Ph.D., Temple University, 2005; 2009. Financial Institutions.

Greene, Jason., Professor, Ph.D., Indiana University, 1996; 2009. Investments.

Liang, Claire, Assistant Professor, Ph.D., University of Alberta, 2014; 2014. Corporate finance.

McNutt, Jamie, Associate Professor, Ph.D., Southern Illinois University Carbondale, 2005; 2009. Financial Institutions.

Peterson, Mark A., Professor and *Chair*, Ph.D., Pennsylvania State University, 1996; 1997. Investments.

Beardsly, Xiaoxin Wang, Associate Professor, Ph.D., Pennsylvania State University, 2003; 2003. Market microstructure and investments.

Zhao, Wanli, Associate Professor, Ph.D., Temple University, 2007, 2012. Corporate Finance.

Graduate Faculty in Management:

Carter, Min, Assistant Professor, Ph.D., Auburn University, 2009; 2015. Leadership

Dai, Ye, Assistant Professor, Ph.D., University of Texas at Austin, 2012; 2012.

DeYong, Gregory D., Assistant Professor, Ph.D., Indiana University, 2010; 2013. Operations management, decision technologies.

Goodale, John., Associate Professor, Ph.D., University of Utah, 1996; 2009. Operations management.

Karau, Steven J., Professor, Ph.D., Purdue University, 1993; 1998. Organizational behavior, human resource management.

Mykytyn, Peter P., Jr., Professor and *Chair*, Ph.D., Arizona State University, Tempe, 1985; 2001. Management information systems.

Nelson, Kay M., Professor, Ph.D., University of Texas at Austin, 1995; 2005. Management information systems.

Nelson, Reed, Professor, *Emeritus*, Ph.D., Cornell University, 1983; 1991.

Pearson, John M., Professor, D.B.A., Mississippi State University, 1991; 2001. Management information systems.

Stubbart, Charles, Associate Professor, *Emeritus*, Ph.D., University of Pittsburgh, 1983; 1991.

Graduate Faculty in Marketing:

Adjei, Mavis, Associate Professor and *Chair*, University of Mississippi, Ph.D., 2006; 2006. Marketing relationships,

customer retention.

Anaza, Nwamaka, Assistant Professor, Ph.D., Purdue University, 2010; 2015.

Clark, Terry, Professor, Ph.D., Texas A&M University, 1987, 1999. Marketing strategy, global marketing, global business strategy.

Jarvis, Cheryl Burke., Professor and *Associate Dean*, Ph.D., Indiana University, 1999; 2009. Customer Relationships, Services Marketing, and Research Methodologies in Marketing.

Knowles, Lynette, Associate Professor, Ph.D., The Ohio State University, 1990; 1988. International business/marketing, marketing channels, physical distribution.

Lee, Jaehoon, Assistant Professor, Ph.D., University of Texas at San Antonio, 2011; 2014. Consumer behavior.

Master of Business Administration

The M.B.A. program is oriented toward preparing students for managerial positions in business and government. The program emphasizes the ability to comprehend internal and external social, legal, political, and economic forces as they affect the decision-making process within a business organization. The specific learning objectives of the program include the following:

- Students must understand basic concepts and terminology in key functional areas of business (i.e., accounting, finance, management, and marketing).
- Students must demonstrate the ability to diagnose, analyze, and provide solutions to complex business situations.
- Students must possess key skills (written and oral communication skills, computer skills, team-work skills, and leadership skills) required for successful managerial careers.
- Students must be able to integrate the functional areas of business such that decision-making serves the interests of the entire business.

The program has been structured with flexibility so as to serve both holders of baccalaureate degrees in business administration and those who hold degrees in other disciplines. The M.B.A. program is accredited by the AACSB International.

M.B.A. Core

BA 510 Managerial Accounting and Control Concepts

BA 530 Financial Management

BA 540 Managerial and Organization Behavior

BA 550 Marketing Management

BA 560 Management of Information Systems

BA 58* International Business Core Requirement

BA 598 Business Policies

- Students with undergraduate degrees in finance must replace BA 530 with a 500-level Finance Course.
- Students with undergraduate degrees in accountancy must replace BA 510 with a 500-level ACCT prefix course.
- International Business Core Requirement of the MBA program may be satisfied by taking BA 580, 581, 582, or 588; by engaging in an international (off-shore) internship or by an approved program offered by a partner institution.

Finance Concentration

Students seeking the M.B.A. concentration in the Finance area will take a total of three 3-hour elective courses.

BA 532	Financial Institutions and Markets
BA 533	Investment Concepts
BA536	Financial Analysis and Security Valuation
BA582	International Finance

Marketing Concentration

Students seeking the M.B.A. concentration in the Marketing area will take a total of three 3-hour elective courses.

BA 505	Brand Management
BA 551	Product Strategy and Management
BA 558	Promotional Strategy and Management
BA 581	Global Marketing

General M.B.A. (G.M.B.A.) Concentration

Students seeking the General M.B.A. track will take a total of four 3-hour elective courses.

BA 505	Brand Management
BA 514	Ethics of Business
BA 522	Operation Strategy / Global Competition
BA 532	Financial Institutions and Markets
BA 536	Financial Analysis & Secu
BA 537	Intellectual Property & Commercialization
BA 548E	Project Management
BA 551	Product Strategy and Management
BA 558	Promotional Strategy and Management
BA 561	Database Design

Admission Requirements

Prospective degree candidates are expected to demonstrate a readiness for graduate study and an aptitude for successful performance in graduate level work in business administration. Admission to the program is based on the applicant's undergraduate record, a satisfactory score on the Graduate Management Admission Test, and other evidence pertaining to ability to perform well in graduate work in business administration. Special circumstances and work experience may be considered if presented. More specifically, the applicant must:

1. Meet all admission requirements set forth by the Graduate School. These requirements are outlined elsewhere in the catalog.
2. Complete the Graduate Management Admission Test and have the results of the test mailed directly to Graduate Programs, College of Business.

For the online MBA program, the GMAT or GRE exam requirement is waived if the applicant has five or more years of professional experience following completion of an undergraduate degree, or if he/she has previously completed a master's program at an accredited university.

For the residential MBA program, the GMAT or GRE exam requirement is waived if the applicant has a business degree from an AACSB accredited university and a 3.5 or higher GPA on their last 60 credits of study, or if he/she has previously completed a master's program at an accredited university.

Information regarding this test is available by logging on to

the website for: Graduate Management Admission Test. The website address is: <http://www.mba.com>.

To apply, one needs to complete and submit a Graduate School application and an M.B.A. program application. Application instructions are available online at: <http://www.business.siu.edu/academics/mba/index.html>. The application process begins at the SIU Graduate School: <http://gradschool.siu.edu/applygrad/index.html>. Transcripts should be sent to Graduate Programs, College of Business, Southern Illinois University Carbondale, Carbondale, IL 62901-4625, (618) 453-3030. E-mail: gradprograms@business.siu.edu.

This program requires a nonrefundable \$65.00 application fee that must be paid electronically with their online application for Admission to Graduate Study in the M.B.A. program in Business and Administration.

Double Major Policy

Any graduate student wishing to pursue a double major for a master's degree that includes business administration must satisfy the following requirements in addition to any requirements stated in the Graduate Catalog.

- The individual must satisfy all requirements for admission to the relevant master's program in business (M.B.A. or M.Acc.).
- The individual must satisfy all foundation requirements of the relevant master's program in business.
- The individual must complete all core courses, secondary core (M.Acc.) courses, and elective course requirements for the relevant master's program in business.
- No more than six hours of coursework outside the College of Business may be counted toward elective requirements in the relevant master's program in business.

Non-Business Graduate Students

- Non-business graduate students will be limited to six hours of 500-level BA prefix courses. These courses require the consent of the instructor and the department, and all course prerequisites must be met.
- Non-business graduate students who are put on academic probation will NOT be allowed to continue in 500 level BA prefix courses.
- Non-business graduate students will be allowed to register for BA level foundation courses (i.e., BA 410, 426, 430, and 450).

Application Deadlines

	Fall	Spring	Summer
Assistantship Applicants	March 15	Sept 15	February 15
Fellowship Applications	Nov. 15 of previous year (Fall awards only)		
Other U.S. Applicants	June 15	Nov. 15	April 1
Other International Applicants	April 15	Sept. 15	February 15

Differential Tuition and Technology Fee. In Fall 2008, the College of Business implemented a differential tuition surcharge of 15% of applicable tuition for College of Business majors. The differential tuition surcharge will be assessed at the in-state tuition rate and will be capped at 15 credit hours

per semester.

Degree Requirements

A minimum of 33 semester hours of coursework is required. Students must earn a 3.0 grade point average (4.0 = A). Candidates who receive permission to write a thesis must complete a minimum of 30 semester hours of coursework plus an acceptable thesis, for which 6 semester hours of credit are assigned.

Students who enter the M.B.A. degree program without the necessary foundation courses in the common body of knowledge of business and administration as specified by the AACSB International must complete them in a satisfactory manner. These students may be required to complete up to 34 semester hours of acceptable course work, complete acceptable proficiency exams, or participation in summer Foundation Workshops to satisfy this requirement.

College of Business Technology Fee. Assessed for CoB majors only at \$6.00 per credit hour Fall, Spring Semesters (up to 12 hours) and Summer Semester (up to 6 hours).

For courses previously taken to be evaluated as possible equivalents to M.B.A. foundation courses at SIU, one needs to have earned a grade of C or higher in each and supply the M.B.A. coordinator with the course syllabus for each course to be evaluated. Where syllabi are not available, a course catalog, or catalogs as appropriate, for the years the courses were completed may be presented. Transcripts may not be substituted for syllabi/catalog descriptions. This supporting documentation needs to be provided to the M.B.A. coordinator at least 2 weeks in advance of one's first M.B.A. advisement appointment and subsequent registration.

The M.B.A. degree program coursework to be taken beyond the foundation courses is determined on an individual basis in conference with the M.B.A. program coordinator. All core and elective requirements must be met. For up-to-date information regarding the core and elective courses of the M.B.A. program, contact: Graduate Programs, College of Business, Rehn Hall, Room 133, Southern Illinois University, Carbondale, IL 62901-4625.

Students may choose to take all of their electives in a particular area such as management, finance, or marketing in fulfilling their electives, or, alternatively, take electives across 2 or more areas. Students may request approval to take one or more substantive electives outside of business which would provide training unavailable through business courses and would facilitate the student meeting career goals.

Transfer Credit

Within limits imposed by the policies of the Graduate School, an incoming student may receive transfer credit for up to 6 semester hours of equivalent coursework if the courses were taken at an AACSB International accredited graduate school.

A graduate student who has 6 hours or less of coursework remaining in their program may petition the master's programs committee for permission to complete up to 6 hours of equivalent coursework at another AACSB International accredited graduate school. The determination of equivalency is to be made by the director of the Master of Business Administration degree program.

Coursework from other than AACSB International accredited

graduate schools must be approved by the master's programs committee.

Academic Retention

In addition to the retention policies of the Graduate School, a student may earn no more than 5 hours of C or lower in, graduate courses taken beyond the foundation requirements, or he/she will be suspended from the M.B.A. program. A student who has 3 outstanding recorded grades of Inc or Def remaining on the grade record at the end of any semester or session, for any reason, will be deemed to be not making normal progress and will be placed on probationary status. If the student has 3 outstanding grades of Inc or Def remaining on record at the end of the next semester or session, the student will be suspended from the program. The definitions of Inc and Def may be found in the Graduate Catalog.

A student who is to receive a grade of Inc in a course is to meet with the instructor to work out a time and conditions for completion of the course within policy guidelines. Typically, a Notification of Incomplete Grade Agreement form is completed and the student is provided with a copy.

Master's students holding graduate assistant positions supported by the College of Business are required to maintain a 3.0 graduate grade point average or automatically lose his/her graduate assistant position. A complete copy of the "Policies and Procedures for the Master's Programs" may be obtained from the Graduate Programs Office, College of Business.

M.B.A./B.A. (Computer Science) Program

The College of Business in conjunction with the College of Science offers a five-year integrated M.B.A./B.A. (Computer Science) Program. Selected students will be admitted to this program directly after high school. These students should take the undergraduate foundation requirements for M.B.A. as their electives while completing their B.A. degree. Their admission to the M.B.A. is guaranteed as long as they maintain a 3.0 GPA in the B.A. in Computer Science. However, they will be required to take the GMAT test prior to admission to the M.B.A. Program.

M.B.A./J.D. Concurrent Degree Program

The College of Business and the School of Law, together, offer the M.B.A./J.D. concurrent degree program. The J.D. degree alone requires completion of 90 semester hours of coursework and the M.B.A. degree alone requires completion of 33 semester hours of coursework; however, in the M.B.A./J.D. concurrent degree program the School of Law accepts 9 semester hours of business coursework toward meeting the J.D. semester hour requirement and the College of Business accepts 9 semester hours of law toward meeting the M.B.A. semester hour requirement. The end result is that the concurrent degree program actually entails completion of 81 semester hours of law courses and 24 semester hours of business courses, with an 18 semester hours savings over pursuing both degrees separately outside of the M.B.A./J.D. concurrent degree program.

A student interested in enrolling in the M.B.A./J.D. concurrent degree program must apply both to the graduate program in law (which involves a law school application) and to the graduate program in business (which involves a Graduate School application and an M.B.A. program application) and be accepted by each program. The student may then request

permission to pursue the concurrent degree program. This request must be made both to the College of Business and the School of Law and should be made prior to commencing the second-year law curriculum.

During the first academic year of concurrent work on the two degrees, the student enrolls only in the first-year law curriculum. In any subsequent academic term, the student may enroll for courses either in the School of Law or in the Master of Business Administration program. A student registered for both law and graduate business courses in the same term must enroll for a minimum of 10 hours in law, and 12 semester hours in total, in order to meet A.B.A. residence requirements and the academic requirements of the School of Law.

M.B.A./M.S. in Professional Media and Media Management Concurrent Degree Program

The College of Business and the College of Mass Communications and Media Arts (MCMA) together offer a concurrent degree program leading to a Master of Business Administration and a Master of Science in Professional Media and Media Management.

Separately the M.B.A. in the College of Business requires completion of 33 semester hours of coursework; the MCMA M.S. in Professional Media and Media Management requires 30 semester hours of coursework. The concurrent degree program entails completion of 21 semester hours of MCMA-approved courses and 24 credit hours of COB-approved courses, for a total of 45 hours. This is a savings of 18 semester hours over pursuing both degrees separately as COB accepts 9 hours of MCMA-approved coursework and MCMA accepts 9 hours of COB-approved coursework. The 24 hours of required COB MBA courses includes all 7 core classes (BA 510, BA 530, BA 540, BA 550, BA 560, BA 598, and an International Requirement) and one BA elective course.

Students wishing to be admitted to the concurrent program must apply and be accepted into the MBA program in the College of Business, as well as apply and be accepted into the MCMA M.S. program in the College of Mass Communication and Media Arts. This initiates the process to pursue the concurrent degrees. Applicants for the concurrent degree program must also earn a satisfactory score on the GMAT or GRE to be admitted to the MBA program, as well as successfully complete the College of Business Foundation workshops offered during the summer semester break, if they have not previously completed the 10 foundation business courses (or their equivalent) required for admission into the MBA program.

M.B.A./M.S. in Agribusiness Economics Concurrent Degree Program

The College of Business and the Department of Agribusiness Economics (ABE) in the College of Agricultural Sciences (COA) together offer an M.B.A./M.S., a concurrent degree program leading to both the Master of Business Administration and the Master of Science with a major in agribusiness economics.

The M.B.A. degree requires completion of 33 semester hours of coursework; the M.S. with a major in ABE requires the completion of 30 semester hours of coursework. In the concurrent M.B.A./M.S. degree program, the College of Business accepts 6 semester hours of ABE approved coursework, and ABE accepts 6 semester hours of College of Business approved coursework. The end result is that the concurrent degree program entails

completion of 27 semester hours of College of Business approved courses and 24 semester hours of ABE approved courses, for a total of 51 hours; this is a savings of 12 semester hours over pursuing both degrees separately outside of the M.B.A./M.S. concurrent degree program.

Students interested in enrolling in the M.B.A./M.S. in agribusiness economics concurrent degree program must apply to both the graduate program in the College of Business and the graduate program in ABE. The student must be accepted by both programs. This initiates the process to pursue the concurrent degrees.

Students enrolled only in the M.B.A. in the College of Business or the M.S. in agribusiness economics may request admission into the other program and approval to pursue the concurrent degree program. Admission to the concurrent degree program must be done at least one semester before the last semester of registration at SIU.

Online MBA Program (42 credit hours, 23 months)

The AACSB-Accredited Online MBA program is for those students who are working professionals and need an advanced degree. The students need to meet all the foundation requirements for the residential MBA, must be admitted to the Graduate School and complete an application to the College of Business Online Master Program available through the Online Master's Degree website at <http://onlinegrad.business.siu.edu>. Once admitted students will be provided an online advisor to guide them through the program. This is a cohort-based program and students are required to complete all courses specified over a 24-month period. Students are awarded the MBA degree upon satisfactory completion of all requirements. The program is 100% online delivery. Descriptions of the individual courses below may be found in the Course Description section.

Requirements for Online MBA Program:

Online M.B.A. CORE

- BA 505 (3)
- BA 506 (2)
- BA 507 (2)
- BA 508 (2)
- BA 509 (2)
- BA 510 (3)
- BA 511 (2)
- BA 514 (3)
- BA 522 (3)
- BA 530 (3)
- BA 531 (3)
- BA 540 (3)
- BA 550 (3)
- BA 560 (3)
- BA 580 (2) or International Immersion course
- BA 598 (3)

Agribusiness Economics Concentration

The oMBA concentration in Agribusiness Economics is designed to develop advanced business management expertise with a specialized focus on the food and agribusiness sector. This degree will prepare students for the unique management challenges in industry firms and government agencies dealing

with agriculture, food production and renewable natural resources, including banking and finance, insurance, farm and operations management, market and policy analysis, agricultural products sales and service, grain merchandising, economic policy, and food marketing, just to name a few.

Students in the online MBA Concentration in Agribusiness Economics will take the following Business Administration and Agribusiness Economics graduate Courses:

- BA 506 Business Communication for MBA Professionals (2)
- BA 507 Critical Issues for Business Leaders (2)
- BA 509 Advanced Seminar in Leadership Development (2)
- BA 510 Managerial Accounting and Control Concepts (3)
- BA 511 Entrepreneurship Theory and Practice (2)
- BA 522 Operations Strategy for Global Competition (3)
- BA 530 Financial Management (3)
- BA 540 Managerial and Organizational Behavior (3)
- BA 550 Marketing Management (3)
- BA 560 Management of Information Systems (3)
- BA 580 International Dimensions of Business and Management (2)
- BA 598 Business Policies (3)
- ABE 500 Agribusiness Economics Research Methodology (3)
- ABE 544 Agricultural Development (3)
- ABE 571 Resource Allocation in the Agribusiness Firm (3)
- ABE 572 Problems and Policies in the Agricultural Sector (3)

For program schedule, visit the College of Business Online Master's Degree Programs website at: <http://onlinegrad.business.siu.edu/about/index.php>

Doctor of Philosophy

The Doctor of Philosophy in business administration degree program is designed to prepare individuals for faculty research and teaching positions in academic institutions and for high-level administrative or staff positions in business, government, and other organizations. Candidates for the Doctor of Philosophy in business administration degree must demonstrate in-depth knowledge of business and administration and high potential to undertake significant research.

Admission Requirements. To be eligible for admission, students must have completed a master's degree or its equivalent. A grade point average in all graduate level work of 3.5 (A = 4.0) is preferred, but not less than 3.0 is permitted for admission.

In certain instances admission to the Doctor of Philosophy in business administration degree program directly from the baccalaureate degree is permitted. To be considered for this admission route, students must have demonstrated promise of success in the Doctor of Philosophy in business administration degree program through outstanding achievement at the undergraduate level (minimum grade point average of 3.5 on a 4.0 scale) and superior performance in both the verbal and quantitative components of the Graduate Management Admission Test (minimum GMAT score of 600).

Applicants with exceptional research potential or outstanding academic preparation may have the option to enter the Doctor

of Philosophy in business administration degree program after at least one semester as an M.B.A/M.Acc. student at SIU.

To apply to the Doctor of Philosophy in business administration degree program, each applicant is required to take the Graduate Management Admission Test (of the Educational Testing Service) and have an official report of these scores sent to SIU. The applicant needs to complete and submit a Graduate School application and a Doctor of Philosophy in business administration degree program application. The application process is entirely online and is located at

<http://gradschool.siu.edu/applygrad/index.html>.

Official transcripts can be sent to:

Graduate Programs, College of Business, Southern Illinois University Carbondale, Carbondale, IL 62901-4625.

E-mail: gradprograms@business.siu.edu.

This program requires a nonrefundable \$65.00 application fee that must be paid electronically with the online application for Admission to Graduate Study in the Doctor of Philosophy program in Business and Administration.

Differential Tuition and Technology Fee. In Fall 2008, the College of Business implemented a differential tuition surcharge of 15% of applicable tuition for College of Business majors. The differential tuition surcharge will be assessed at the in-state tuition rate and will be capped at 15 credit hours per semester.

Degree Requirements. Students in the program must complete course work in certain foundation areas. A student who has completed successfully the requirements for the M.B.A. degree from an AACSB International accredited graduate business program will have met the foundation requirements. A student with a M.Acc. degree from an AACSB International accredited program will be expected to take some courses outside the accounting area, to be determined by the student's advisory committee. All other students will either complete the following courses or demonstrate proficiency based on prior academic work:

- BA 410-3 Financial Accounting Concepts
- BA 426-3 Managerial Economics
- MATH 140-4 Short Course in Calculus
- QUAN 506-4 Inferential Statistics
- and 5 courses from any 3 of the following 4 areas:
 - a. BA 430, BA 510, BA 530
 - b. BA 450, BA 550, BA 598
 - c. BA 540, BA 598
 - d. BA 452, BA 420, BA 560

In addition, the student must demonstrate proficiency in computer programming.

The student must complete a prescribed program of doctoral coursework beyond the foundation work. A minimum of 60 semester hours is required: 12–18 hours in the major field; 6–12 hours in a support field; 6–12 hours of research tools; and 24 hours of dissertation credit. Additional hours may be required as prescribed by the student's program advisory committee (PAC). Students on C.B assistantships must teach at least 3-6 hours during their program with the appropriate student/teacher evaluations. The assistantship student's PAC determines whether sufficient proficiency has been attained

before being admitted to candidacy, and an evaluation listing must be inserted into the Student's permanent file and signed by the Ph.D. Director.

It is expected that all doctoral coursework will be completed at SIU. In exceptional cases, the PAC may consider petitions to accept credit, not to exceed 6 hours, for doctoral coursework done at other institutions.

In addition to the retention policy of the Graduate School, for the Doctor of Philosophy in business administration degree program five credit hours of *C* or three credits of *D* or *F* in any graduate level course will result in automatic dismissal from the Doctor of Philosophy in business administration degree program without any rights of appeal.

Advisement. For each student a program advisory committee (PAC) is constituted and approved according to procedures described in the Doctor of Philosophy in business administration degree program policies and procedures document of the College of Business. The PAC is responsible for developing and approving a program of study for the student which meets all requirements of the Graduate School and the Doctor of Philosophy in business administration degree program. The specific program is designed in terms of the individual student's career objectives.

Comprehensive Examinations. The comprehensive examination is designed to determine the breadth and depth of the student's knowledge within the discipline. A minimum of 2 years of study (48 semester hours) beyond the baccalaureate must be completed before the student is permitted to sit for the comprehensive examination, and the student must be in the last semester of all scheduled coursework.

The comprehensive examination has a written and oral portion. After successful completion of the written segment, the student will sit for the oral portion of the comprehensive examination. Students who pass the oral portion will be recommended for candidacy when the residency and research tool requirements have been met. Students who fail the comprehensive examination, or any part thereof, may petition to retake the examination or any part thereof.

Specific conditions may be stipulated before the student can sit for the examination a second time. Those who fail the comprehensive examination a second time will be dismissed from the program.

Dissertation. Upon admission to candidacy, a dissertation committee is constituted and approved according to procedures described in the Doctor of Philosophy in business administration degree program policies and procedures document of the college. The student will prepare a written proposal and submit it to the dissertation committee and make an oral presentation of the dissertation proposal. On acceptance of the written and oral presentation of the dissertation proposal by the dissertation committee, the student will proceed with further work on the dissertation topic. The dissertation committee will monitor the student's progress in completing the dissertation. A final oral examination will be administered by the dissertation committee and will cover the subject of the dissertation and other matters related to the discipline. Upon successful completion of the final oral examination, the candidate will be recommended for the

Doctor of Philosophy in business administration degree.

Other Graduate Degrees Offered by the College of Business

The college also offers the Master of Accountancy (M.Acc.) degree. In addition, jointly with the School of Law the College of Business offers the J.D./M.Acc. concurrent degree program. The reader is referred to the accountancy section of this catalog for details regarding the M.Acc. and J.D./M.Acc. programs. Additional information regarding the M.Acc. degree program may be obtained by contacting the School of Accountancy in the College of Business. E-mail: memorris@business.siu.edu.

Additional Information: MBA or PhD

Additional information regarding the M.B.A. degree program or Doctor of Philosophy in Business Administration degree program may be obtained by contacting Graduate Programs, College of Business, Southern Illinois University Carbondale, Rehn Hall 133, Carbondale, IL 62901-4625. E-mail: gradprograms@siu.edu.

Website: <http://www.business.siu.edu>

Courses (BA)

Students desiring to enroll in these courses must be admitted to the Master of Business Administration, Master of Accountancy, or Doctor of Philosophy in Business and Administration degree program or have permission of the Associate Dean of Graduate Programs or the Director of the School of Accountancy.

410-3 Financial Accounting Concepts. Basic concepts, principles, and techniques used in the generation of accounting data for financial statement preparation and interpretation. Asset, liability, equity valuations and income determination is stressed. Restricted to enrollment in M.B.A. program or consent of department.

426-3 Managerial Economics. Develops conceptual framework for business decision making with emphasis on demand, costs, prices and profits. Restricted to enrollment in M.B.A. program or consent of department.

430-3 Business Finance. An introductory course combining both a description of the structure of business financing and an analysis of functional finance from a managerial viewpoint. Prerequisite: BA 410, QUAN 506 and M.B.A. program "computer ability" foundation requirement, or equivalent. Restricted to enrollment in M.B.A. program or consent of department.

450-3 Introduction to Marketing Concepts. An overview of the role of marketing within an economic system and of the major marketing activities and decisions within an organization. Emphasis is on developing an understanding of the marketing process. Restricted to enrollment in M.B.A. program or consent of department.

470-3 Legal and Social Environment. An overview of the legal, social, and ethical dimensions which influence business with particular attention to the role of law as a control factor of society in the business world. Restricted to enrollment in M.B.A. program or consent of department.

503-3 Management of Change. The methods and processes of planned change are examined. Special emphasis is placed on the design and implementation of continuous improvement systems and related issues of managing constant change.

Change models are viewed in the context of international competitiveness and a dynamic global environment. Restricted to enrollment in College of Business graduate program or consent of department.

505-3 Brand Management. This course will focus on important issues facing brand managers who are managing existing brands. The focus will be at the level of the brand and the discussions will pertain to issues involved in the development and implementation of brand strategies. The course will provide students with a conceptual framework to examine brand equity and use it as the basis for managing categories of brands, brand extensions, and dealing with the threats of generic brands. There will be an emphasis on bringing together the different elements of a brand strategy. Prerequisite: BA 550. Restricted to enrollment in College of Business graduate program or consent of department.

506-2 Business Communication for MBA Professionals. Business Communication for MBA Professionals will prepare you for the demands of professional writing in graduate level study and professional environments. It will cover topics within the field of academic, professional, and digital communication, including: synthesis and critique of academic and professional texts, document design, precision writing, presentation development, collaborative composition, client communication, and digital communication strategies. Familiarity, experience, and successful execution of professional writing goals will be emphasized through a variety of writing activities and thoughtful revision and synthesis of those activities in a significant course project. Graded S/U or DEF.

507-2 Critical issues for Business Leaders. This course is designed to provide masters students with a forum to further explore topics on critical issues for business leaders. The two major themes for the course are to enhance the ability to think clearly and decisively; and, to build leadership and team performance. The process shall involve reading provocative articles and engaging in experiential exercises the culmination of which provides for a practical portfolio. Graded S/U or DEF.

508-2 Seminar on Career Effectiveness. This course is designed to provide masters students with a forum to further explore topics on career effectiveness. Our emphasis will always be on self-development and the attainment of tools to advance your professional career. The two major themes for the course are to maximize personal job performance/career success and to engage in effective interaction with others. The process shall involve reading provocative articles and engaging in experiential exercises, the culmination of which provides for a practical knowledge of select issues related to personal brand management. Graded S/U or DEF.

509-2 Advanced Seminar in Leadership Development. This is a class on leadership. The focus is not so much on leadership in terms of content, but more so about leadership processes, in developing your self-confidence and the skills necessary to lead. We will build upon the conceptual foundations provided from your previous management courses, structuring opportunities for further understanding of theoretical ideas, but to emphasizing more of their practical application. Graded S/U or DEF.

510-3 Managerial Accounting and Control Concepts. Basic cost concepts, measures, methods and systems of internal

accounting useful for managerial planning, implementation, control and performance evaluation. Includes cost analysis relevant for non-routine decision-making. Prerequisite: BA 410 and MBA program "computer ability" foundation requirement met, or equivalent. Restricted to enrollment in College of Business graduate program or consent of department.

511-2 Entrepreneurship Theory and Practice. This course is designed to provide master's students with an introduction to entrepreneurship, its theory, and practical applications. During this course you will be exposed to a number of activities related to starting and operating a business. The goal of this course is to provide you with the basic tools for business creation. The culmination of the course will be the completion of a business plan. Graded S/U or DEF.

513-3 Accounting Concepts in Business Organizations. Accounting theory and practice as it applies to business and other organizations. Emphasis is on current problem areas in accounting and on research methods being used to resolve these problems. Restricted to Doctoral student in Business Administration or consent of department. Enrollment in College of Business graduate program or consent of department.

514-3 Ethics of Business. (Same as ACCT 514) philosophical implications of contemporary issues in business ethics. Restricted to enrollment in M.Acc. or M.B.A. Program, enrollment in College of Business graduate program or consent of department.

521-3 Business Conditions Analysis. Emphasis is given to macro-economic theory as it affects economic forecasting. Particular emphasis is given to GNP forecasting models, industry forecasts and forecasting for the firm. Prerequisite: BA 430 or equivalent. Restricted to enrollment in College of Business graduate program or consent of department.

522-3 Operations Strategy for Global Competition. Study of the development of competitive strategy for the operations function, how that strategy relates to organizational strategy and how the operations function can contribute to an organizations' competitive capabilities in the global marketplace. Restricted to enrollment in College of Business graduate program or consent of department.

530-3 Financial Management. Provide a broad overview of basic concepts, principles, and recent innovations in financial management. Topics covered will include risk and return, valuation, capital budgeting, capital structure and cost of capital, dividend policy, financial planning, international financial management and corporate restructuring. Prerequisite: BA 510, ECON 240 and 241 or equivalent, FIN 330 with a grade of C or better. Restricted to enrollment in College of Business graduate program or consent of the department. Students who have had FIN 361 or its equivalent or were undergraduate finance majors are not allowed in BA 530 and should take BA 531 instead.

531-3 Advanced Financial Management. An evaluation of selected financial policies connected with the acquisition and disposition of funds by the firm. An emphasis is placed on quantitative solutions to these problems. Prerequisite: BA 430 or equivalent. Restricted to enrollment in College of Business graduate program or consent of department.

532-3 Financial Institutions and Markets. The principal financial institutions and markets will be studied in relation

to their contribution to the efficient operation of the individual enterprise and the total company. Prerequisite: BA 430 or equivalent. Restricted to enrollment in College of Business graduate program or consent of department.

533-3 Investment Concepts. A study of fixed return and variable return securities, investment services, industry and issue analysis, empirical studies of groups and individual stock price movements. Prerequisite: BA 430 or equivalent. Restricted to enrollment in College of Business graduate program or consent of department.

534-3 Financial Decision Making. Study of the scope and nature of advanced financial decision making and the application of quantitative tools and techniques to decisions relating to working capital, fixed assets, cost of capital, value of the firm and financial structure. Restricted to enrollment in College of Business graduate program or consent of department.

536-3 Financial Analysis and Security Valuation. (Same as FIN 469) Study of financial problems facing corporations, their causes and solutions. Emphasis given to the impact of these financial problems on how the market values securities. Topics include liquidity and leverage analysis, analysis of profitability, and other financial analysis tools. Not available for students with credit for FIN 469. Prerequisite: BA 530 or BA 531. Restricted to enrollment in MBA program or consent of department.

537-3 Intellectual Property and Commercialization. (Same as LAW 633 and ENGR 522) Course teaches substance and practice of commercializing products of scientific and technical research. Provides a basic understanding of intellectual property laws in commercialization context and how those laws are applied in various fields of technology. Will learn how to value intangible assets, taking into account their commercial potential and legal status. Course will consider the legal and business issues surrounding marketing of products of research. Will prepare and negotiate license agreements. Will analyze legal and business issues surrounding whether and how to enforce intellectual property rights. Content and methods of course delivery and evaluation has been approved for provision by distance education.

539A-E 1 to 15 Seminar in Finance. A series of doctoral seminars on theoretical and empirical issues in finance. Sections (a) through (d) may be taken only once. Section (e) may be repeated as topics vary. (a) Corporate financial theory. (b) Financial institutions and markets. (c) Portfolio theory and speculative markets. (d) Empirical methods in finance. (e) Selected topics. Restricted to enrollment in College of Business graduate program or consent of department.

540-3 Managerial and Organization Behavior. Case analyses of human problems in the business organization. Application of findings of behavioral science research to organization problems. Development of direction and leadership skills. Prerequisite: BA 440 or equivalent. Restricted to enrollment in College of Business graduate program or consent of department.

543-3 Personnel Management. An overview of the field of personnel administration, based on a review of the relevant literature and on practice in simulations of problems typically encountered in the field. Prerequisite: BA 440 or equivalent. Restricted to enrollment in College of Business graduate program or consent of department.

544-3 Advanced Production Planning and Inventory Management. An in-depth study of analytical models and techniques for production planning, scheduling and inventory management. Designed to prepare students for relevant portions of American Production and Inventory Control Society (APICS) certification examinations. Restricted to enrollment in College of Business graduate program or consent of department.

545-3 to 21 (3,3,3,3,3,3) Seminar in Organization Studies. A series of advanced seminars in organization studies. Sections (a)-(g) can be taken only once. (a) Foundations in Organization Studies. (b) Advances in Organizational Behavior. (c) Advances in Organization Theory. (d) Advances in Strategic Management. (e) Special Topics in Organizational Behavior. (f) Special Topics in Organization Theory. (g) Special Topics in Strategic Management. Restricted to enrollment in College of Business graduate program or consent of department.

546-3 Leadership and Managerial Behavior. This course will concentrate on leader and manager behavior at middle and upper organizational levels. Emphasis will be placed on leader and manager effectiveness and the factors that impact effectiveness. Prerequisite: BA 540 or equivalent. Restricted to enrollment in College of Business graduate program or consent of department.

547-3 to 15 (3,3,3,3 to 6) Seminar in Production/Operations Management. Series of advanced seminars in Production/Operations Management. Sections (a) through (c) may be taken only once. (a) Foundations in Production/Operations Management. (b) Service Operations Management. (c) Production/Operations Management and Information Systems. (d) Special Topics in Production/Operations Management. Restricted to enrollment in College of Business graduate program or consent of department.

548-3 to 18 (3,3,3,3,3 to 6) Seminar in Management Information Systems. A series of advanced seminars on Management Information Systems (MIS). Sections (a) through (d) may be taken only once. Section (e) may be repeated as topics vary. (a) Advances in Management Information Systems. (b) Decision Support and Information Systems. (c) Quantitative and Computer Methods for Decision Support and Information Systems. (d) Strategic Management of Information. Restricted to enrollment in College of Business graduate program or consent of department.

548E-Project Management. Organizations have become increasingly complex and their success is generally dependent on how well individuals can function as a group. It is important that you understand the activities that are necessary to participate in or manage a successful project; these topics include project selection, project scheduling, project budgeting, project monitoring and controlling a project, and closing a project. Restricted to enrollment in College of Business graduate program or consent of department.

550-3 Marketing Management. A managerial approach to the study of marketing. Emphasis is on the nature and scope of the marketing manager's responsibilities and on marketing decision-making. Prerequisite: BA 450 or equivalent. Restricted to enrollment in College of Business graduate program or consent of department.

551-3 Product Strategy and Management. Designed to treat product management and its relationships with business policies and procedures; the development of multiproduct

strategies, means of developing such strategies and the problems and methods of commercialization. Prerequisite: BA 550 or equivalent. Restricted to enrollment in College of Business graduate program or consent of department.

552-3 Research Methodology for Marketing. The study of theory, method and procedure for quantitative and qualitative analysis of primary and secondary marketing data. Emphasis is placed on application of specific research tools to the process of formulating and testing research hypotheses. Restricted to enrollment in College of Business graduate program or consent of department.

554-3 Strategic Issues in Marketing and Society. A critical view of the social, political, legal and economic impact of strategic marketing decision making. Emphasis is on the ethical and moral ramifications of marketing activities in a complex social environment. Restricted to enrollment in College of Business graduate program or consent of department.

555-3 Seminar in Consumer Behavior. Emphasis on the theories and research relating behavioral science to the discipline of marketing. Development of sophisticated comprehension of the consumption process is undertaken. Restricted to enrollment in College of Business graduate program or consent of department.

556-3 Seminar in Marketing Strategy. Long run market opportunities are identified and evaluated. Methods of implementation and execution affecting the relationship of strategic marketing planning to the allocation decisions of top management are emphasized. The orientation is toward theoretical development to provide a base for continuing research in the field. Restricted to enrollment in College of Business graduate program or consent of department.

557-3 Seminar in Marketing Theory. The philosophical bases underlying the development of theory in marketing. The process of development of marketing ideations through research is emphasized. Restricted to enrollment in College of Business graduate program or consent of department.

558-3 Promotional Strategy and Management. The study of the elements of the promotional mix including advertising, personal selling, sales promotion and publicity and how they apply in the profit and not-for-profit sectors of the market place. Prerequisite: BA 550 or equivalent. Restricted to enrollment in College of Business graduate program or consent of department.

560-3 Management of Information Systems. A survey of information system design, analysis and operations. Topics include systems concepts, systems analysis and design, database management, software and hardware concepts, decision support systems, expert systems, distributed processing and telecommunications and information systems planning. Applications of information technology will be emphasized. Prerequisite: BA 452 or equivalent. Restricted to enrollment in College of Business graduate program or consent of department.

561-3 Database Design and Applications. Database planning, design and implementation; application of data modeling techniques-entity-relationship diagrams, hierarchical, network, relational and object-oriented data modeling; physical design and data administration; Distributed and Expert Database Systems. Restricted to enrollment in College of Business graduate program or consent of department.

562-3 Information Systems and Design. Principles and concepts; strategic systems planning; tools and techniques for analysis and design; construction and quality management;

reusability; methodology evaluation; full life cycle CASE tools. Restricted to enrollment in College of Business graduate program or consent of department.

563-3 Management of Financial Information. An overview of new database, decision support and data communications technology used in financial institutions. Topics include loan/insurance applicant analysis, trust and investment services, value at risk, derivative security management and operations issues. Prerequisite: BA 452 or equivalent, BA 532 or equivalent, BA 560 or equivalent. Restricted to enrollment in College of Business graduate program or consent of department.

564-3 Advanced Topics in E-Commerce and Marketing. The purpose of this course is to focus and evaluate recent developments in information technology that carry far-reaching implications for marketing management. Specifically, the course will familiarize students with the complexities, challenges and opportunities associated with managing the recent explosion in the scope and availability of comprehensive, timely, and highly disaggregate, marketing information. Prerequisite: BA 560. Restricted to enrollment in College of Business graduate program or consent of department.

570-1 to 2 (1,1) Professional Development Dimensions. To aid the professional development of M.B.A. students by providing a variety of experiences to address attitudes, values and ethical standards. Executive guest speakers, roundtable discussion, simulations and role-playing will be used. To be taken as **(a)** one hour and **(b)** one hour. Additional charges of approximately \$20 may be assessed for field trips. Restricted to enrollment in College of Business graduate program or consent of department.

571-1 Teaching and Research Essentials for Doctoral Candidates. This course is designed to prepare doctoral candidates within the College of Business for entry level (Assistant Professor) positions. Teaching strategies, classroom management, development of courses as well as research and publication strategies are discussed. Restricted to doctoral status in the College of Business. This course must be taken the second semester of the student's course work.

573-3 Planning Systems and Strategic Decisions. A critical review of theory and research on the structure, content and process of strategic decisions. The design and implementation of planning systems also is emphasized. Restricted to enrollment in College of Business graduate program or consent of department.

574-3 Advanced Research Methods in Business Administration. A capstone research course in business that exposes the student to a full range of research experiences. Emphasis is on integrating learning and creative thinking in the execution of the research process. Restricted to enrollment in College of Business graduate program or consent of department.

574B-3 Advanced Research Methods II. This course is a practicum in advanced research methods. It will focus on analysis of data, interpretation of results and synthesis of conclusions based on a clear understanding of the objectives of research, the characteristics of data and techniques for manipulating data. Restricted to enrollment in College of Business graduate program or consent of department.

575-3 Seminar in Multivariate Statistics. This seminar in multivariate statistics will give doctoral students in Business

Administration a theoretical and practical knowledge of multivariate methods such as cluster analysis, multiple regression, discriminant analysis, canonical analysis, etc., for the purpose of equipping them for dissertation work, and subsequent research for publication in the top academic business journals. Restricted to enrollment in College of Business graduate program or consent of department.

580-2 to 3 International Dimensions of Business and Management. International business and activities are examined in the international environment. The course will focus on concepts and issues of international business and will analyze the marketing, financial, accounting, managerial, logistical and production functions of international operations. Emphasis is on integrating, learning and creative thinking through lecture and case analysis. Foundational M.B.A. coursework should be completed. Restricted to enrollment in College of Business graduate program or consent of department.

581-3 Global Marketing. The basic elements of marketing management are identified in the setting of a global business environment. Emphasis is given to variables in the international markets that effect strategic business planning such as cultural, ethical, political and economic influences. The course focuses on current trends in the marketing practices of organization. Prerequisite: BA 550 and MKTG 435 or equivalent. Restricted to enrollment in College of Business graduate program or consent of department.

582-3 International Finance. Discussion of international monetary system, parity conditions, foreign exchange markets and financial markets. Special focus on financial management of the multinational firm, including risk assessment, hedging, capital budgeting and performance evaluation and control. Not available for students with credit for FIN 464. Prerequisite: BA 530. Restricted to enrollment in College of Business graduate program, or consent of department.

583-3 Global Operations Management. A study of issues and problems related to managing global operations and current practices. Topics include international operations comparisons, international operations improvement and competitive leverage, issues critical to global operations, international cross-functional coordination, coordinating international material flow, coordinating international process and product design, among others. Prerequisite: BA 580. Restricted to enrollment in College of Business graduate program or consent of department.

584-3 Global Business Strategies. To examine decision-making in international business via a broad study of the opportunities and problems encountered when business operations cross national boundaries; to impart current knowledge regarding the theory and practice of functional aspects of global marketing, international finance and global operations management; to focus on the multinational nature of international managerial decisions. Prerequisite: BA 580. Restricted to enrollment in College of Business graduate program or consent of department.

588-3 to 6 Study Abroad. Provides graduate credit for study abroad accredited and approved foreign institutions. To be taken (a) first study abroad program, and (b) second study abroad program. Restricted to enrollment in MBA program or consent of department.

591-1 to 15 (3 per semester per 700 number) Independent

Study. Directed independent study in selected areas of business administration. May be repeated as topics vary. Restricted to enrollment in College of Business graduate program or departmental approval required.

595-1 to 6 Internship – Work Experience. Current practical experience in a business or other work directly related to course work in a College of Business program and to the student's educational objectives might be used as a basis for granting credit to the college. Credit is given when specific program credit cannot be granted and is usable for elective credit only. Credit is sought by petition and must be approved by the COB dean before registration. Graded S/U or DEF only. Restricted to enrollment in College of Business graduate program or consent of department.

598-3 Business Policies. Study of the development and evaluation of business strategies and policies as they relate to the overall performance of the firm within its environment. Knowledge of the functional areas of administration, available business data and analytical tools will be utilized in solving comprehensive business cases and simulation games. Restricted to enrollment in College of Business graduate program or consent of department.

599-3 to 6 Thesis. Restricted to enrollment in M.B.A. program or consent of department, consent of instructor.

600-1 to 24 (1 to 16 per semester) Dissertation. Minimum of 24 hours to be earned for the Doctor of Philosophy degree in Business Administration. Prerequisite: advancement to candidacy for the Doctor of Philosophy degree in Business Administration.

601-1 per semester Continuing Enrollment. For those graduate students in business who have not finished their degree programs and who have one or more INCs or DEFs on their records and/or are in the process of completing their degree requirements. The student must have previously enrolled in a minimum of 36 hours of course work that meets M.B.A. program core and elective requirement or have completed a minimum of 24 hours of BA 600 before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded S/U or DEF only.

Courses (FIN)

There is no graduate program offered solely through the Department of Finance. Four-hundred-level courses in this department may be taken for graduate credit unless otherwise indicated in the course description.

432-3 Options and Future Markets. Study of the modern concepts and issues in financial options and future markets. Emphasis on risk management in financial institutions, and applications in corporate finance and funds management. Prerequisite: FIN 331 with a grade of C or better. Restrictions: College of Business majors or minors, junior standing or higher, or department approval required.

433-3 Portfolio Theory and Management. Examination of modern concepts relating to management of security portfolios. Topics include security analysis, Markowitz Portfolio Theory, efficient market hypothesis, portfolio performance measurement, risk and portfolio construction. Prerequisite: FIN 331 with a grade of C or better. Restrictions: College of

Business majors or minors, junior standing or higher; or departmental approval required.

462-3 Working Capital Management. Liquidity analysis and management with a focus on managing cash, marketable securities, accounts receivable, inventory, banking relationships and short-term financing. Students may choose to be associated with Corporate Treasury Management Program and may be eligible to pursue CTP certificate. Prerequisite: FIN 361 or concurrent enrollment. Restrictions: College of Business majors or minors, junior standing or higher; or departmental approval required.

463-3 Forecasting and Capital Budgeting. Long-term forecasting techniques used in business; alternative approaches to capital structure decisions, cost of capital measurement; and performance measurement for investment decisions including mergers and leasing; explicit consideration of certainty, risk and uncertainty in investment analysis; theory and applications in private and public sectors. Prerequisite: FIN 361 or concurrent enrollment. Restrictions: College of Business majors or minors, junior standing or higher; or departmental approval required.

Courses (MGMT)

There is no graduate program offered solely through the Department of Management. Four-hundred-level courses in this department may be taken for graduate credit unless otherwise indicated in the course description.

471-3 Seminar in Entrepreneurship. Investigation of selected special or advanced topics in seminar format. Topics may include but are not limited to entrepreneurship, small business analysis, or topics related to the ownership and management of a business. Activities will include library and field research, data analysis, report writing, and active participation in seminar presentations and discussions. Designed particularly for the student who has completed FIN 350 and MGMT 350 and has discussed personal small business or entrepreneurial objectives with the instructor prior to registration. Restrictions: College of Business majors or minors, junior standing; or departmental approval required.

Courses (MKTG)

There is no graduate program offered solely through the Department of Marketing. Four-hundred-level courses may be taken for graduate credit unless otherwise indicated in the course description.

401-3 Retail Management. Designed to present and integrate basic principles in decision areas such as location, layout, organization, personnel, merchandise control, pricing, sales promotion, traditional and e-commerce marketing strategies and channel development considerations. A strategic managerial perspective of retail merchandising. Prerequisite: MKTG 304 with a grade of C or better. Restrictions: College of Business majors or minors, junior standing or higher; or departmental approval required.

405-3 Brand Management. This course is about branding, and the ways brands acquire and maintain economic and non-economic value. During our time together, we will explore the origins, power, theory, meaning, relevance and practice of brands, brand development, brand metrics and brand

management. Prerequisite: MKTG 304 with a grade of C or better. Restrictions: College of Business majors or minors, junior standing or higher; or departmental approval required.

435-3 International Marketing. Analysis of international operations and markets. Emphasis on the factors influencing marketing to and within foreign countries and the alternative methods of operations open to international firms including e-commerce. Prerequisite: MKTG 304 with a grade of C or better. Restrictions: College of Business majors or minors, junior standing or higher; or departmental approval required.

438-3 Sales Management. Analysis of the sales effort within the marketing system. Philosophies, concepts and judgment criteria of the sales function in relation to the total marketing program. Emphasis on the integration of computer- and Internet-based technologies in the strategic development and operations of the sales force. Prerequisite: MKTG 304 and MGMT 304 with grades of C or better. Restrictions: College of Business majors or minors, junior standing or higher; or departmental approval required.

452-3 Physical Distribution Management. Integration of physical distribution activities of the firm into a system. Transportation and location as elements of the system. Inventories and service as constraints upon the system. Planning, operation, organization and management of the system. Prerequisite: MKTG 304 with a grade of C or better. Restrictions: College of Business majors or minors, junior standing or higher; or departmental approval required.

463-3 Advertising Management. Deals with advertising from the viewpoint of business management. Discussion of integrated marketing communication and problems of integrating advertising strategy into the firm's total marketing program. Course discusses the role of advertising in different business environments such as technology driven markets and electronic commerce. Prerequisite: MKTG 304 and 363 with grades of C or better. Restrictions: College of Business majors or minors, junior standing or higher; or departmental approval required.

489-3 Services Marketing. An exploration of the special challenges of services marketing, including analyzing and developing solutions for new service design and innovation; branding and selling services; service quality and customer satisfaction; infusion of services into manufacturing industries; service delivery and distribution including through intermediaries and electronic channels; self-service technology and smart services; pricing and ROI of services; and service failure and recovery. Prerequisite: 304 with a grade of C or better. Restrictions: College of Business majors or minors, junior standing or higher; or departmental approval required.

490-3 Marketing Evaluation and Metrics. The course teaches mathematical tools to aid in the decision-making that occurs in many if not most marketing positions. Students will apply basic economic, financial, and accounting techniques to solve marketing problems. Prerequisite: MKTG 304 with a grade of C or better, MATH 139, ACCT 220 & 230, FIN 330, ACCT/FIN/MGMT 208, MGMT 345. Restricted to College of Business majors or minors, junior standing or higher.

493-3 Marketing Strategy. Integrates all marketing concepts discussed in core required marketing courses. The course is aimed at developing the student's ability to think comprehensively, and to apply marketing concepts in traditional

and e-commerce business environments through analysis of strategic marketing problems. Prerequisite: MKTG 305, 329, 363 and 390 with grades of *C* or better. Restrictions: Marketing major or departmental approval required.

496-3 Field Seminar in International Business. Coursework and field study related to international business issues. Students will complete coursework on campus and then travel to international locations (e.g., Europe, Asia, or South America) for scheduled business visits with companies operating in those locations (both international and domestic businesses). Students will also complete additional report writing upon return from their international trip. Fees: package cost for air transportation, land travel in and between countries, lodging, and some meals, in addition to tuition and on-campus costs. Prerequisites: MKTG 304. Restrictions: College of Business majors or minors, junior standing or higher; or departmental approval required.

497- 3 to 9 (3,3,3) Special Topics in Marketing. An exploration of selected current topics in marketing with an emphasis on covering a specific area in great depth. Topics are announced in advance; both students and faculty may suggest ideas. Students may repeat enrollment in the course as the topic varies. Prerequisite: MKTG 304 with a grade of *C* or better. Restrictions: College of Business majors or minors, junior standing or higher; Special approval needed from the department.

Center for the Study of Crime, Delinquency, and Corrections

(See Criminology and Criminal Justice for program description)

Chemistry & Biochemistry

www.chem.siu.edu/index.php

chemistry@chem.siu.edu

COLLEGE OF SCIENCE

Graduate Faculty:

Bausch, Mark J., Associate Professor, Ph.D., Northwestern University, 1982; 1987. Organic radical anion basicities, radical acidities, stability of organic cations.

Davis, Joe M., Professor, *Emeritus*, Ph.D., University of Utah, 1985; 1987.

Du, Zhihua, Assistant Professor, Ph.D., University of Texas-Austin, 1997; 2009. Structural biology, NMR and X-ray crystallography, synthetic biology, bioinformatics.

Gao, Yong, Associate Professor, Ph.D., University of Alberta, 1998; 2000. Bio-organic chemistry; medicinal chemistry; biomaterials.

Gagnon, Keith T., Assistant Professor, Ph.D., North Carolina State University, 2007; 2014. Biochemistry of nucleic acids, RNA and DNA-protein interactions in biology and disease.

Ge, Qingfeng, Professor, Ph.D., Tianjing University, 1991; 2003. Physical/Materials Chemistry, computational chemistry, surface science, kinetics and catalysis, biomaterials and biocatalysis.

Goodson, Boyd M., Professor, Ph.D., University of California, Berkeley, 1999; 2002. Structure and dynamics of molecules and proteins, optical/nuclear double resonance, NMR and MRI, quantum computation.

Hinckley, Conrad C., Professor, *Emeritus*, Ph.D., University of Texas, 1964; 1966.

Hou, Yuqing, Research Assistant Professor, Ph.D., Southern Illinois University Carbondale, 1997; 1998.

Kinsel, Gary R., Professor and *Chair*, Ph.D., University of Colorado Boulder, 1989; 2005. Analytical Chemistry, MALDI and ESI mass spectrometry, RF plasmapolymers, biomaterials, proteomics, microfluidics, surface analysis.

Kohli, Punit, Associate Professor, Ph.D., Michigan State University, 2000; 2004. Bionanoscience, transport through nanotubes, materials and surface chemistry.

Koropchak, John A., Professor, *Emeritus*, Ph.D., University of Georgia, 1980; 1984.

Koster, David F., Professor, *Emeritus*, Ph.D., Texas A&M University, 1965; 1967.

McCarroll, Matthew E., Professor, Ph.D., University of Idaho, 1998; 2000. Analytical, molecular spectroscopy, fluorescence sensors, chiral and molecular recognition, capillary electrophoresis.

Moran, Sean D., Assistant Professor, Ph.D., Columbia University, 2008; 2014. Biophysical chemistry, biomolecular dynamics, and ultrafast infrared spectroscopy.

Plunkett, Kyle, Assistant Professor, Ph.D., University of Illinois, 2005; 2010. Organic chemistry, polymers, organic electronic materials, surface chemistry.

Scott, Colleen, N., Assistant Professor, Ph.D., University of Pittsburgh, 2005; 2010. Organic synthesis – polymeric materials, silicon chemistry – sensors, materials, synthetic methodology.

Smith, Gerard V., Professor *Emeritus*, Ph.D., University of

Arkansas, 1959; 1966.

Suni, Ian I., Professor, Ph.D., Harvard University, 1992; 2013. Electrochemistry, including applications to biosensing, thin film growth, nonomaterials, and corrosion.

Tolley, Luke T., Associate Professor, Ph.D., University of North Carolina, 2001; 2003. Analytical Chemistry, chromatography, capillary electrophoresis, mass spectroscopy, intercellular signaling biomarkers.

Trimble, Russell F., Professor, *Emeritus*, Ph.D., Massachusetts Institute of Technology, 1952; 1954.

Tyrrell, James, Professor, *Emeritus*, Ph.D., University of Glasgow, 1963; 1967.

Wang, Lichang, Professor, Ph.D., University of Copenhagen, 1993; 2001. Physical, theoretical/ computational chemistry, transition metal nanoparticles, organic photoelectronic materials, polymers, and biomolecules.

Programs leading to the Doctor of Philosophy and Master of Science degrees may be undertaken in the general areas of analytical, biochemistry, inorganic, materials, organic, and physical chemistry. The doctoral degree in chemistry is a research degree. To be awarded this degree, the student must demonstrate, to the satisfaction of the graduate committee, the ability to conduct original and independent research within some area of chemistry and must make an original contribution to the science. The master's degree also requires a research project, but with less emphasis on originality and independence.

Admission. Each student must have a baccalaureate degree in one of the sciences, mathematics, or engineering to be considered for admission to an advanced degree program.

An undergraduate major in chemistry, with the following courses, is desirable:

1. One year of organic chemistry (lecture and laboratory).
2. One year of calculus-based physical chemistry (lecture and laboratory).
3. One year of analytical chemistry including instrumental analysis.

Students with deficiencies in any area may be admitted, but such deficiencies may restrict the research areas available to the student and lead to requirements for additional courses during graduate study.

Prospective students are encouraged to contact faculty in areas of the students' research interest.

Applicants are strongly encouraged to submit Graduate Record Examination (GRE) general and chemistry test scores.

Foreign students whose native language is not English will be required to obtain at least 550 paper score, 220 computer score, on the Test for English as a Foreign Language (TOEFL).

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Chemistry and Biochemistry. Applicants must pay this fee by credit card.

Placement Examinations. During the week before the beginning of classes, each admitted student is given written examinations (ACS standard or equivalent examination) in the five divisions of chemistry: analytical, inorganic, organic, physical, and

biochemistry. Every student is required to take at least three exams. The results of these examinations are used to advise the student regarding any deficiencies to be corrected, and to place the student in appropriate courses as determined by a Graduate Student Advisory Committee. Therefore, we strongly encourage and expect all beginning students to review the appropriate undergraduate material before taking these examinations. Failure to pass the exams will generally require that the student take some remedial coursework.

Introduction to Research Techniques. All graduate students must register for CHEM 592, Introduction to Research, during the first fall semester in residence.

Minimum Registration. All students admitted to the department will register for a minimum of 9 credit hours every semester in residence except during the first semester, summer sessions, and while registered for CHEM 601 only. In the first semester, the students must register for a minimum of 6 credit-hours, and in every summer session, a minimum of 3 credit-hours. Registration for less than this requirement is not considered satisfactory progress toward a degree.

Formal Course Work Requirement. Each student must complete the courses specified by the student's graduate committee in the program of study.

Each student must complete the courses specified by the student's graduate committee in the program of the study. Generally, these will include the courses specified by the student's major division. The minimum course requirement for students in the masters and doctoral programs includes at least 21 credit hours of 500-level lecture-style courses and follows a "2+2+3" format, in which all students must take for credit at least two courses (six semester hours) within the student's major field and at least two courses (six semester hours) from outside the major field. In addition, students must take three lecture-style courses at the 500-level, which must be approved by the Student's Graduate Committee. These three courses may be within the student's major division or may be from outside the major field or outside the Department. Select 400-level lecture-style courses offered by the Chemistry Department (see Departmental Requirements and Regulations) are eligible, including CHEM 451A, CHEM 451B, CHEM 456, CHEM 468, and CHEM 479. Eligible courses taken while in the master's program in the chemistry department at SIU may be applied to these departmental courses requirements.

For a student working in a cross-divisional area, the committee will design an appropriate program of study in consultation with the Graduate Advisor and the faculty of the divisions involved. Students must receive credit for graded presentations recorded as CHEM 593. Masters and doctoral students are required to receive credit for CHEM 593A, which is a literature presentation that is organized through the students divisional journal club. In addition, doctoral students must receive credit for CHEM 593B and CHEM 593C, which are received for graded presentations associated with the presentation of an independent research proposal and a presentation of the students dissertation research, respectively.

All students must take 1 hour of CHEM 597, Professional Training, and one hour of CHEM 595, Journal Club, each

semester in residence.

Research Director and Graduate Committee Selection. Each student must select a research director and graduate committee preferably during the first semester, but no later than the end of the second semester in residence. The student must obtain a selection form provided by the graduate adviser and must interview at least 4 faculty members before selecting a research director and graduate committee. For a master's candidate, the committee shall consist of the research director (chair), at least 1 member of the major division other than the research director, and at least 1 member outside the major division. For a Ph.D. candidate, the committee is identical except that at least 1 member outside the department is included. The chair of the Department of Chemistry and Biochemistry, if not otherwise appointed, is an exofficio member of every graduate committee. A division may increase this requirement.

Graduate Committee Functions. The functions of the graduate committee are listed below.

1. To plan and approve the student's program of study.
2. To review the student's progress in courses and suggest and approve changes in the program of study.
3. To evaluate the student's progress in research and to make appropriate recommendations.
4. To determine whether a student may continue toward a degree. If continuation is denied, the committee must notify in writing the department chair of the reasons for this denial.
5. To read and evaluate the student's thesis or dissertation.
6. To conduct required oral examinations.

As soon as possible after being appointed, the committee will meet to plan the student's program. At this time the progress and program form is completed and filed with the graduate adviser. The committee may require preparation of a master's thesis even if directly pursuing a Ph.D. degree has been previously approved by the faculty.

Research Tools. The department requires no specific re-search tools. A student's graduate committee, taking into account the student's background and the needs of the research area, may require that the student acquire one or more research tools (e.g., foreign language, computer programming, statistics, etc.). It is the students' responsibility to see that any research tool requirement is completed before scheduling the preliminary oral examination.

Assistantship Support. Continuation of assistantship support is contingent upon the student making satisfactory progress toward a degree. In addition, continuation of teaching assistantship support depends upon satisfactory performance of assigned duties. The Graduate School has established time limits for financial support.

First Year Evaluation. The faculty, meeting as a committee of the whole, will review the progress of all graduate students at the end of their first year in residence. For students in the doctoral program the faculty can:

1. recommend continuation in the doctoral program.
2. recommend transfer to a terminal master's degree program.

3. request that the Graduate School terminate the student from the program (giving cause).

For students in the master's program the faculty can:

1. recommend petitioning the Graduate School to allow entry to the doctoral program (accelerated entry option). Such petition can be made any time after one semester in residence.
2. recommend continuation in the master's program with the option to petition the Graduate School to grant a master's degree equivalency. When granted, this allows the student to apply for entrance to the doctoral program without writing and defending a thesis.
3. recommend continuation in the master's program with option to petition to enter the doctoral program after completion of a master's thesis.
4. recommend continuation in a terminal master's program.
5. request that the Graduate School terminate the student from the program (giving cause).

Preliminary Examination for the Ph.D. Degree. Each student in the doctoral program must pass a preliminary examination before being advanced to candidacy. The first portion of the preliminary examination is given in the form of cumulative exams with 10 examinations scheduled each calendar year. The student must pass 4 examinations in no more than 10 consecutive trials. Students must begin cumulative examinations at the start of their second calendar year or immediately on admission to the doctoral program if one calendar year has already been completed in the master's program. After the student completes the cumulative examinations, the preparation and defense of an original research proposal will serve as the oral portion of the preliminary examination.

Research. A research project is required of all graduate students. A student in the doctoral program must earn at least 32 credit hours in research and dissertation (CHEM 598 and 600). A minimum of 24 hours must be dissertation credit (CHEM 600). The results of the research must be presented in the form of a dissertation acceptable to both the student's committee and to the Graduate School.

Dissertation. After being admitted to candidacy, the student must register for 24 semester hours of CHEM 600 and complete a dissertation acceptable to both the student's Graduate Committee and to the Graduate School before graduation. Students who have registered for the 24 semester hours of dissertation credit and have not completed the doctoral dissertation are subject to the continuing extended enrollment requirement described in the next section.

Extended Registration. A student who has completed all doctoral degree requirements with the exception of writing a dissertation, and who is in the process of writing a dissertation, must register for Chemistry 601 (1 to 12 credit hours per semester) until the dissertation is completed and defended.

Final Oral Examination. A student in the doctoral program must schedule and pass a final oral examination (defense of dissertation). The student will present a departmental seminar for credit (Chemistry 593C) based on the results of the research.

After questions from the general audience, the student's graduate committee will conduct an oral examination of the student. The grade for Chemistry 593C is based on the seminar presentation and is independent of the oral examination. Copies of the dissertation must be presented to members of the student's graduate committee at least one week before the seminar and the examination.

Courses (CHEM)

All laboratory courses in chemistry and biochemistry may require the student to purchase either special notebooks or workbooks. All students enrolled in a chemistry class that includes a laboratory session will be assessed a breakage charge for all glassware broken. This policy will apply to undergraduate and graduate students

411-3 Intermediate Inorganic Chemistry. Fundamentals of inorganic chemistry, covering bonding and structure, coordination compounds and the chemistry of some familiar and less familiar elements. Three lectures per week. Prerequisite: CHEM 360. Offered spring semester only.

431-3 Environmental Chemistry. Chemical principles applied to the environment and environmental problems. Chemical kinetics, thermodynamic and equilibrium concepts as they relate to the atmosphere, water and soil will be discussed to include current problems of pollutants, pollutant evaluation and pollutant remediation. Discussion of methods for the chemical analysis of environmental samples will also be included. Prerequisite: C or better in 330 and 340.

434-2 to 4 Instrumental Analytical Chemistry. Theory and practice of instrumental measurements, including emission and absorption spectroscopic, capillary electrophoretic and chromatographic methods. Two lectures and two three-hour laboratories per week for four credits. Enrollment for two credit hours is restricted to graduate students in the Department of Chemistry and Biochemistry who are advised to take instrumental analysis. Prerequisite: C or better in 330. Offered fall semester only. Laboratory fee: \$48.

439-3 Forensic Chemistry. A one semester course in the analysis of forensics samples. Topics include sample collection and preservation, chain of custody, data validation and reports, and analytical methods which may include (as time permits) chromatography, mass spectroscopy, fluorescence and absorbance spectroscopy, fingerprint identification, and scanning electron and light microscopy. One lecture and one six-hour laboratory meeting per week. Enrollment is limited with preference given to students with high academic standings. Prerequisite: C or better in 330 and 434. Offered spring semester only. Laboratory fee: \$48.

442-3 Organic Chemistry II. This is a continuation of 340 emphasizing topics that were not covered in the first semester. Topics will include the chemistry of aromatic compounds, dienes and other carbon-carbon bond forming reactions. Advanced topics such as polymers and biomolecules may also be covered. Three lectures per week. Prerequisite: C or better in 340, 341; concurrent enrollment in 343 is recommended. Offered spring semester only.

443-2 Organic Chemistry Laboratory II. A second organic laboratory course based upon a synthetic approach. Students

will learn modern synthetic organic chemistry techniques including modern spectroscopic techniques. One one-hour lecture and one four-hour laboratory per week. Prerequisite: *C* or better in CHEM 340, 341, 442 or concurrent enrollment in 442. Offered spring semester only. Lab fee: \$48.

444-3 Intermediate Organic Chemistry. A transitional course between introductory and graduate level chemistry. The chemistry of carbon compounds based upon a mechanistic approach will be discussed. Three lectures per week. Prerequisite: *C* or better in 340 and 442. Offered fall semester only.

451A- Biochemistry. (Same as Biochemistry 451A and Molecular Biology, Microbiology and Biochemistry 451A) First half of the 451 A,B two semester course. Must be taken in A,B sequence. Three lectures per week. Introduction to biomolecules, biochemical techniques, expression of genetic information, basic thermodynamics, ligand binding, aqueous solutions, protein structure, spectroscopy. Prerequisites: CHEM 340 and CHEM 342 or 442, or equivalents.

451B-3 Biochemistry. (Same as Molecular Biology, Microbiology and Biochemistry 451B and Biochemistry 451B) Second half of 451A,B two semester course. Must be taken in A, B sequence. Basic kinetics, enzyme kinetics, enzyme inhibitors, regulation of enzymes, oxidation-reduction, high energy bonds, transport across membranes, intermediary metabolism, hormonal control of metabolism. Prerequisites: MBMB 451A or BCHM 451A or CHEM 451A or equivalent.

456-3 Biophysical Chemistry. (Same as Biochemistry 456 and Molecular Biology, Microbiology and Biochemistry 456) A one-semester course in Biophysical Chemistry intended for biochemists and molecular biologists. Emphasis will be on solution thermodynamics, kinetics and spectroscopy applied to biological systems. Prerequisite: CHEM 340 and CHEM 342 or 442, MATH 141 or 150, MBMB 451A or BCHM 451A or CHEM 451A or equivalents.

460-3 Quantum Mechanics and Spectroscopy. An introduction to quantum mechanics and spectroscopy. Prerequisite: Mathematics 250; *C* or better in 360. MATH 221 or 305 is recommended as prerequisite or concurrent enrollment. Offered spring semester only.

468-3 Application of Symmetry to Chemistry. The concepts of symmetry elements, groups and character tables will be taught. Symmetry will be applied to molecules in order to simplify and characterize their wave functions and vibrational frequencies. Prerequisite: *C* or better in 460. Offered spring semester in odd years only.

479-3 Principles of Materials Chemistry. Introduction to fundamental concepts of materials chemistry. Synthesis, characterization, processing and applications of different materials including solids, polymers, ceramics and molecularly designed materials. Prerequisite: 360, 411 or concurrent enrollment. Offered fall semester in odd years only.

489-1 to 3 Special Topics in Chemistry. Special approval needed from the chair.

506-3 Chemistry Topics for Teachers. This graduate-level chemistry course covers topics, methods and activities that target the needs of elementary and middle school science teachers. The course consists of a combination of lectures and laboratory experiments. The specific subjects covered during

the course change, depending on the needs of the current students. This course may only be taken as part of an approved major. Special approval needed from the instructor.

511-6 (3,3) Advanced Inorganic Chemistry. (a) Principles of group theory and their application to molecular structure, ligand field theory and its application and magnetic properties of matter. (b) Energetics, kinetics and mechanisms of inorganic systems. Prerequisite: one year of physical chemistry, CHEM 411.

519-3 Advanced Topics in Inorganic Chemistry. Metal ions in biological processes and other selected topics to be announced by the department. Maximum credit nine semester hours. Special approval needed from the instructor.

531-3 Introduction to Analytical Separations. An introduction to the basic principles underlying separation science, with emphasis on all major chromatographies, gel and capillary electrophoresis, isoelectric focusing, field-flow fractionation, rate and isopycnic sedimentation, filtration, reverse osmosis and related methods. Prerequisite: MATH 250.

532-3 Analytical Chemistry Instrumentation. Introduction to analog and digital electronics and the computer control of system components. The course will focus on chemical instrumental and the use of filters, amplifiers and digital signal processing to improve sensitivity and detection limits. Two lectures and one three-hour laboratory per week. Prerequisite: CHEM 434.

533-3 Analytical Spectroscopy. Fundamental and experimental aspects of electronic and vibrational spectrometry, with a particular emphasis on the spectroscopic analysis of atomic and molecular species. Various sources of electromagnetic radiation, detectors, optical components and the optimization of experimental methods are covered in detail. Common spectroscopic techniques are covered in detail and a portion of the course covers newly emerging techniques and developments. Prerequisite: CHEM 434.

534-3 Electrochemistry. Fundamentals and applications of electrochemical methods, with emphasis on the thermodynamics and kinetics of electron transfer, electrode double-layer structures, as well as varied voltammetric techniques.

535-3 Advanced Analytical Chemistry. Course surveys various statistical, data-manipulative, and numerical methods as applied to analytical chemistry, including probability distributions, methods of maximum likelihood, linear and nonlinear least squares, correlation coefficients, chi-square, *F* and *T* distributions, Pearson statistics, analysis of variance, convolution, deconvolution, cross-correlation, autocorrelation, data acquisition, Nyquist theorem, aliasing, digitization errors, digital filtering, Monte Carlo methods, and finite-difference equations. Prerequisite: 434.

536-3 Principles of Mass Spectrometry. This course is an introduction to mass spectrometry with a focus on pharmaceutical and biological applications. Topics that will be covered include instrument design, ionization techniques, tandem mass spectrometry, chromatography/mass spectrometry and mass spectral interpretation. Prerequisite: 434.

537-3 Fluorescence Spectroscopy. Fundamental and experimental aspects of analytical methods based on the various phenomena of luminescence. General principles of luminescence are covered in detail, as well as analytical techniques based on fluorescence quenching, energy transfer,

polarization, and time resolved methods. Aspects of source of electromagnetic radiation, detectors, and electronic/optical components are discussed specifically as they pertain to fluorescence spectroscopy. Newly emerging fluorescence based techniques are also discussed. Prerequisite: 434 and 533 (or consent of the instructor).

538-3 Nanoscale Probing and Imaging. This course covers basic principles of scanning probe microscopy and spectroscopy including STM, AFM, ACM and NSOM, and the broad applications in nanoscale probing and imaging. Topics include surface characterization and manipulation, nanolithography, nanomaterials, self-assembly, molecular electronics, optoelectronics, nanoscale electron transfer, single-molecular spectroscopy, protein structures, enzyme dynamics, and living cell imaging. Prerequisite: undergraduate physical and analytical chemistry.

539-3 Advanced Topics in Analytical Chemistry. Selected topics of interest to practicing analytical chemists such as microanalytical chemistry, functional-group chemical determinations, absorption spectroscopy and electro-analytical chemistry. Maximum credit nine semester hours. Prerequisite: CHEM 434 with a minimum grade of C.

541-3 Organic Structure and Reactivity. Structure and reactivity of organic compounds: steric, electronic, kinetic and thermodynamic aspects and their relation to reactive intermediates.

542-3 Mechanistic Organic Chemistry. Reaction mechanisms in organic chemistry. Electrocyclic and sigmatropic reactions, cycloadditions, free radicals, photochemistry and organometallic catalysis. Spectroscopic methods.

543-3 Synthetic Organic Chemistry. Organic synthesis: classical and modern methods.

549-3 Advanced Topics in Organic Chemistry. Specialized topics in organic chemistry. The topic to be covered is announced by the department. Maximum credit nine semester hours. Prerequisite: CHEM 542.

552-3 Biomolecular Structure and Function. This course will cover the structural basis of biomolecules with an emphasis on the chemical and physical aspects involved in the architecture of proteins and nucleic acids. The study of the physical properties of biomolecular interactions and assembly of biomolecules into macromolecular complexes will be covered. Interpretation of data from atomic resolution techniques will be discussed. Prerequisites: 350 or 451A/B, or equivalent.

559-3 Advanced Topics in Biological Chemistry. Specialized topics in biological chemistry. The topic to be covered is announced by the department. Maximum credit nine semester hours. Prerequisite: C or better in CHEM 350 or CHEM 451A,B or equivalent.

560-3 Introduction to Quantum Chemistry. Basic principles and applications of quantum mechanics to chemistry. Topics include operator and vector algebra, classical mechanics, angular momentum, approximate methods, hydrogen-like atoms and molecular electronic structure. Three lectures per week. Prerequisite: one year of under-graduate physical chemistry.

561-3 Molecular Orbital Theory. An introduction to molecular orbital theory. Applications and limitations of various methods. Three lectures per week. Prerequisite: one year of undergraduate

physical chemistry including quantum mechanics.

562-3 Advanced Molecular Spectroscopy. Theory of rotational and vibrational spectroscopy, electronic spectroscopy of molecules. Three lectures per week. Prerequisite: 468 or consent of instructor.

563-3 Computational Chemical and Materials Sciences. An introduction to commercial molecular modeling soft-wares and to performing designed research projects related to chemical and materials sciences. Three lectures per week. Prerequisite: CHEM 360 and CHEM 460 (1 year of undergraduate Physical Chemistry) or consent of instructor.

564-3 Statistical Thermodynamics. Principles of statistical mechanics and applications to equilibrium and nonequilibrium systems. Topics include ideal gases, monatomic crystals, lattice statistics, the cluster method, correlation functions, Brownian motion, the Boltzmann equation and the Kubo-Green technique. Three lectures per week.

569-3 Advanced Topics in Physical Chemistry. Topic to be announced by the department. Maximum credit nine semester hours. Special approval needed from the instructor.

575-3 Methods of Materials Characterization. An introduction to the structural, morphological, spectroscopic, and thermal characterization techniques commonly used in materials chemistry. Special approval needed from the instructor.

579-3 Topics in Advanced Materials. Design and applications of advanced materials. Special topics will focus on contemporary research areas of interest as determined by the instructor. Special approval needed from the instructor.

592-1 Introduction to Research. Introduction to the techniques and methods of chemical research including good laboratory practice, research ethics, record keeping, publication, patents and currently active research in this department. Graded *S/U* only.

593A,B,C (1,1,1) Graded Seminar. Seminar presentations on advanced topics given in partial fulfillment of the requirements for the MS and PhD degrees in Chemistry. (a) Literature Seminar, (b) Independent Proposal Presentation, (c) Research Seminar.

594-2 to 3 Special Readings in Chemistry. Assigned library work in any of these fields of chemistry with individual instruction by a staff member. (a) Analytical, (b) biochemistry, (c) Inorganic, (d) Organic, (e) Physical. Maximum credit three hours.

595-1 Advanced Seminar in Chemistry. Advanced level talks presented by graduate students. (a) Analytical (b) biochemistry (c) inorganic, (d) organic, and (e) physical chemistry.

596-1 to 6 (1 to 3 per semester) Master's Degree Research. Graded research for Master's Degree only. Maximum 6 credit hours. Prerequisite: Completion of at least 9 hours of graded graduate course work in the program. Restricted to admission to Master's program in Chemistry and Biochemistry. Special approval needed from student's graduate advisory committee.

597-1 to 15 Professional Training. Experience in teaching of chemistry, instrument operation and special research projects. One hour required each semester in residence. Graded *S/U* only. Restricted to graduate standing.

598-1 to 50 (1 to 12 per semester) Research. Maximum credit 50 hours, except by permission of the student's graduate advisory committee. Graded *S/U* only. Special approval needed

from the chair.

599-1 to 6 Thesis. Maximum credit six hours. Special approval needed from the chair.

600-1 to 30 (1 to 12 per semester) Dissertation—Doctoral.

Requirement for Ph.D. degree, 24 hours. Maximum credit 30 hours, except by permission of the student's graduate advisory committee. Prerequisite: CHEM 598.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Cinema and Photography

(See Mass Communication and Media Arts for program description)

Civil and Environmental Engineering

<http://civil.engr.siu.edu>

cedept@engr.siu.edu

COLLEGE OF ENGINEERING

Graduate Faculty:

Bravo, Rolando, Associate Professor, Ph.D., University of Houston, 1990; 1991. Surface and subsurface hydrology, hydraulics and fluid mechanics.

Butson, Gary J., Associate Professor, *Emeritus*, Ph.D., University of Illinois at Urbana-Champaign, 1981; 1992. Mechanics of materials, vibrations, solid mechanics.

Chevalier, Lizette R., Professor and *Associate Dean for Undergraduate Education and Outreach*, Ph.D., Michigan State University, 1994; 1995. Environmental restoration of groundwater aquifers, experimental investigation of immiscible flow, and numerical modeling of subsurface transport.

Cook, Echol E., Professor, *Emeritus*, Ph.D., Oklahoma State University, 1970; 1971.

DeVantier, Bruce A., Associate Professor, Ph.D., University of California-Davis, 1983; 1983. Water quality modeling, sediment transport, turbulence modeling, finite element methods.

Evers, James L., Associate Professor, *Emeritus*, Ph.D., University of Alabama, 1969; 1969.

Hsiao, J. Kent, Associate Professor, Ph.D., University of Utah—Salt Lake City, 2000; 2001. Structural earthquake engineering, structural reliability, structural design of buildings and bridges using steel, reinforced or prestressed concrete, masonry, and wood.

Kalra, Ajay, Assistant Professor, Ph.D., University of Nevada, 2011; 2015. Hydraulics and Water Resources Engineering, hydro-climatology, urban sustainability, water-energy-climate nexus, probabilistic forecasting and downscaling, surface water and groundwater interactions.

Kassimali, Aslam, Professor and *Distinguished Teacher*, Ph.D., University of Missouri, 1976; 1980. Structural engineering, nonlinear structural analysis, structural dynamics and stability.

Kolay, Prabir, Associate Professor, Ph. D., Indian Institute of Technology, IIT Bombay, 2001; 2010. Geotechnical Engineering, Soil Stabilization, utilization of recycled concrete aggregate (RCA) and coal ash, unsaturated soil, thermal properties of soil, and numerical modeling.

Kumar, Sanjeev, Professor, *Distinguished Teacher and Chair*, Ph.D., University of Missouri-Rolla, 1996; 1998. Dynamic soil-structure interaction, piles under lateral loads, settlement prediction of landfills, hydraulic conductivity of clay barriers, seismic analysis and design of landfills, ground motion amplification in soils, liquefaction of silts and sands and machine foundations.

Liang, Yanna, Associate Professor, Ph.D., Utah State University, 2006; 2007. Bioremediation of organic pollutants in subsurface and groundwater, bioenergy production from alternative sources, and biomaterial production from biological processes.

Liu, Jia, Assistant Professor, Ph.D., University of Houston, 2014; 2015. Environmental Engineering, renewable energy

production, microbial fuel cell, water/wastewater treatment and groundwater/soil remediation, material development for energy safety and environmental pollution detection.

Puri, Vijay K., Professor, Ph.D., University of Missouri-Rolla, 1984; 1986. Geotechnical engineering, soil dynamics, machine foundations, liquefaction of soils.

Ray, Bill T., Associate Professor, *Emeritus*, Ph.D., University of Missouri-Rolla, 1984; 1985.

Rubayi, Najim, Professor, *Emeritus*, Ph.D., University of Wisconsin, 1966; 1966.

Sami, Sedat, Professor, *Emeritus*, Ph.D., University of Iowa, 1966; 1966.

Tezcan, Jale, Associate Professor, Ph.D., Rice University, 2005; 2005. Non-linear structural behavior, neural networks In system Identification and structural control, rehabilitation, and retrofitting of structures damaged by earthquakes.

Warwick, John J., Professor and *Dean*, Ph.D., The Pennsylvania State University, 1983; 2011. Numerical modeling of the transport and fate of contaminants in surface water systems, impacts of nutrients on stream algal growth, transport of sediment and associated mercury in fluvial systems, and simulating the effects of non-point source pollutants on in-stream water quality.

Yen, Max Shing-Chung, Professor, *Emeritus*, Ph.D., Virginia Polytechnic Institute, 1984; 1984.

Master of Science Degree in Civil Engineering

Graduate work leading to the Master of Science degree in civil engineering is offered by the Department of Civil and Environmental Engineering. The program provides advanced study in the areas of structural engineering, environmental engineering, geotechnical engineering, and hydraulic and water resources engineering.

Admission

The Department of Civil and Environmental Engineering requires that applicants to the master's program hold a bachelor's degree in civil or environmental engineering (or equivalent), or have completed all undergraduate degree requirements prior to registration, with minimum grade point average (GPA) of 3.0 ($A = 4.0$) for the last 60 hours of undergraduate work. Students having a GPA between 2.7 and 3.0 will be considered on a case-by-case basis. A student whose undergraduate training is deficient may be required to take additional coursework without graduate credit. All applicants are required to submit GRE scores in support of their applications for admission (minimum scores: 146 Verbal, 147 Quantitative, 3.5 Analytical Writing). The GRE scores must be less than five years old at the time of registration. Minimum requirements for GRE verbal and analytical writing may be waived if the student's TOEFL score is greater than 570 (test center), 230 (computer based) or 82 (internet based), or IELTS score of 7.0 or higher, and he/she possesses good communication skills.

Students apply on-line at <http://gradschool.siu.edu/applygrad/index.html>. A nonrefundable \$50.00 application fee is required and must be paid by credit card. Applications cannot be processed until the fee is paid.

Requirements

A graduate student in the Department of Civil and Environmental Engineering is required to develop a program of study with a graduate adviser and establish a graduate committee of at least three members before the end of his/her first semester in the graduate program. Each student majoring in civil engineering may, with the approval of the graduate committee, also take graduate level courses in other branches of engineering or in areas of science and business, such as physics, geology, chemistry, mathematics, life science, administrative sciences, or computer science.

A minimum of thirty semester hours of acceptable graduate credit is required, including a minimum of three semester hours of CE 599 Thesis. Of this total, eighteen semester hours must be earned in the Department of Civil and Environmental Engineering. Furthermore, at least fifteen semester hours must be 500-level and completed at Southern Illinois University Carbondale. Each candidate is also required to pass a comprehensive oral examination covering all of the student's graduate work, including a thesis.

Each student will select a minimum of three engineering graduate faculty members to serve as a graduate committee, subject to the approval of the Chair of the Civil and Environmental Engineering Department. The committee will:

1. approve the student's program of study;
2. approve the student's thesis topic;
3. approve the completed thesis;
4. administer and approve the comprehensive oral examination.

Teaching or research assistantships and fellowships are available for qualified applicants. Additional information about the program, courses, assistantships, and fellowships may be obtained from the College of Engineering or the Department of Civil and Environmental Engineering.

Master of Engineering Degree in Civil Engineering

The Master of Engineering degree (ME) in Civil Engineering is a non-thesis, course only, professional degree designed to provide advanced technical knowledge for professional practice. The program provides advanced study in the areas of structural engineering, environmental engineering, geotechnical engineering, and hydraulic and water resources engineering.

Admission

The Department of Civil and Environmental Engineering requires that applicants to the master's program hold a bachelor's degree in civil or environmental engineering (or equivalent), or have completed all undergraduate degree requirements prior to registration, with minimum grade point average (GPA) of 3.0 ($A = 4.0$) for the last 60 hours of undergraduate work. Students having a GPA between 2.7 and 3.0 will be considered on a case-by-case basis. The GRE is not required for students applying to the ME degree program.

Students apply on-line at <http://gradschool.siu.edu/>. A nonrefundable application \$65.00 fee is required and must be paid by credit card. Applications cannot be processed until the fee is paid.

Requirements

For graduation, the ME student is required to complete thirty semester hours of graduate level courses. Of this, eighteen

semester hours must be earned in the Civil Engineering department. Furthermore, at least fifteen semester hours must be 500-level and completed at Southern Illinois University Carbondale. Students are required to take CE 593 Civil Engineering Project. However, this requirement is waived if a student takes an additional 500 level course, i.e., a total of 18 semester hours of 500-level courses. Students may, with the approval of the Department Chair, also take graduate level courses in other branches of engineering or in areas of science and business, such as physics, geology, chemistry, mathematics, life science, administrative sciences, or computer science.

The ME program permits students to complete an advanced degree in three semesters (12 credit hours Fall, 12 credit hours Spring, 6 credit hours Summer). This is a non-research degree, teaching or research assistantships are not available for students pursuing this degree, nor would this be a suitable track to pursue a Ph.D.

Courses (CE)

410-3 Solid Waste Engineering. Engineering aspects of solid waste prevention, treatment, recycling and disposal. Design of recycling programs, solid waste treatment and disposal facilities. State and federal regulations. Problems, sources, and effects of solid waste. Design projects required. Prerequisite: 310.

412-3 Contaminant Fate, Transport and Remediation in Groundwater. (Same as FCE 512) Mathematics of flow and mass transport in the saturated and vadose zones; retardation and attenuation of dissolved solutes; flow of nonaqueous phase liquids; review of groundwater remediation technologies; review of flow and transport models. Prerequisite: CE 310 and 320 or consent of the instructor for non CE majors.

413-3 Collection Systems Design. Design of waste water and storm water collection systems including installation of buried pipes. Determination of design loads and flows, system layout and pipe size. Prerequisite: CE 310 and ENGR 370A.

418-3 Water and Wastewater Treatment. A study of the theory and design of water and wastewater treatment systems, including physical, chemical, and biological processes. Topics include sedimentation, biological treatment, hardness removal, filtration, chlorination and residuals management. Prerequisite: CE 310, ENGR 370A and completion of/concurrent enrollment in ENGR 351.

419-3 Advanced Water and Wastewater Treatment. Advanced concepts in the analysis and design of water and wastewater treatment plants. Topics include advanced physical, chemical and biological processes. Emphasis is on the treatment and disposal of sludges, design of facilities, advanced treatment principles, and toxics removal. Prerequisite: 418.

421-3 Foundation Design. Application of soil mechanics to the design of the foundations of structures; subsurface exploration; bearing capacity and settlement analysis of shallow foundations; lateral earth pressures and design of retaining walls; capacity and settlement of pile foundations for vertical axial loads. Prerequisite: CE 320.

422-3 Environmental Geotechnology. Geotechnical aspects of land disposal of solid waste and remediation, solute transport in saturated soils, waste characterization and soil-waste

interaction, engineering properties of municipal wastes, construction quality control of liners, slope stability and settlement considerations, use of geosynthetics and geotextiles, cap design, gas generation, migration and management. Prerequisite: 310, 320.

426-3 Seepage and Slope Stability Analysis. (Same as CE 526) Seepage through soils; numerical and physical modeling of two-dimensional flow; basic mechanism of slope stability analysis; analytical methods in analyzing slopes; slope stabilization. Prerequisites: CE 320.

431-3 Pavement Design. Design of highway pavements including subgrades, subbases, and bases; soil stabilization; stresses in pavements; design of flexible and rigid pavements; cost analysis and pavement selection; and pavement evaluation and rehabilitation. Prerequisite: CE 320 and 330.

432-3 Computer Aided Design and Drawing (CADD) for Civil Engineers. A study of civil engineering drawings and their relationship to engineering design in the CADD environment. Emphasis is on the skills associated with developing and understanding technical drawings, including construction plans and related documents, for engineering design. Computer based design and drawing techniques and related software. Includes 3 hours lab per week. Prerequisite: Completion of or concurrent enrollment in CE 263.

440-3 Statically Indeterminate Structures. Analysis of trusses, beams, and frames. Approximate methods. Method of consistent deformations. Three-moment theorem. Slope deflection. Moment distribution. Column analogy. Plastic analysis. Matrix methods. Prerequisite: 340.

441-3 Matrix Methods of Structural Analysis. Flexibility method and stiffness method applied to framed structures. Introduction to finite elements. Prerequisite: 340.

442-3 Structural Steel Design. An introduction to structural steel design with an emphasis on buildings. Design of structural members and typical welded and bolted connections in accordance with the specifications of the Steel Construction Manual of the American Institute of Steel Construction (AISC). Design project and report required. Prerequisite: CE 340.

444-3 Reinforced Concrete Design. Behavior and strength design of reinforced concrete beams, slabs, compression members and footings. Prerequisite: 340.

445-3 Fundamental Theory of Earthquake Engineering. The nature and mechanics of earthquakes. Plate tectonics, types of faulting, recording and measuring ground motion. Analysis of free and forced vibration of a single degree of freedom system. Steady state and transient response. Impulse response function. Dynamic amplification and resonance. Response to ground motion. Response spectrum analysis. Prerequisite: CE 340, 320 or consent of instructor.

446-3 Prestressed Concrete Design. Fundamental concepts of analysis and design. Materials. Flexure, shear, and torsions. Deflections. Prestress losses. Composite beams. Indeterminate structures. Slabs. Bridges. Prerequisite: CE 444 or concurrent enrollment or consent of the instructor.

447-3 Seismic Design of Structures. Basic seismology, earthquake characteristics and effects of earthquakes on structures, vibration and diaphragm theories, seismic provisions of the International Building Code, general structural design and seismic resistant concrete and steel

structures. Prerequisite: 442 or 444, concurrent enrollment or consent of instructor.

448-3 Structural Design of Highway Bridges. Structural design of highway bridges in accordance with the specifications of the American Association of State Highway and Transportation Officials (AASHTO); superstructure includes concrete decks, steel girders, prestressed and post-tensioned concrete girders; substructure includes abutments, wingwalls, piers, and footings. Prerequisite: 442 or 444, concurrent enrollment or consent of instructor.

471-3 Groundwater Hydrology. Analysis of groundwater flow and the transport of pollution by subsurface flow; applications to the design of production wells and remediation of polluted areas; finite difference methods for subsurface analyses. Prerequisite: ENGR 370A or consent of instructor.

472-3 Open Channel Hydraulics. Open channel flow, energy and momentum, design of channels, gradually varied flow computations, practical problems, spatially varied flow, rapidly varied flow, unsteady flow, flood routing, method of characteristics. Prerequisite: 474 or consent of instructor.

473-3 Hydrologic Analysis and Design. Hydrological cycle, stream-flow analysis, hydrograph generation, frequency analysis, flood routing, watershed analysis, urban hydrology, flood plain analysis. Application of hydrology to the design of small dams, spillways, drainage systems. Prerequisite: ENGR 370A.

474-3 Hydraulic Engineering Design. Study of pipe flow, network systems, pump selection, open channel flow, uniform flow, critical flow, gradually varied flow, rapidly varied flow, design of transitions, water surface profiles. Prerequisite: ENGR 370A.

500-1 to 4 Seminar. Collective and/or individual study of selected issues and problems relating to various areas of civil engineering. Restricted to graduate standing.

510-3 Hazardous Waste Engineering. Analysis of hazardous waste generation, storage, shipping, treatment, and disposal. Source reduction methods. Government regulations. Remedial action. Prerequisite: CE 418 or consent of instructor.

511-3 Nanotechnology and Subsurface Remediation. Conventional and emerging nanotechnology-based remediation technologies for subsurface environment; review of current soil and groundwater remediation technologies; sediment remediation, nano-synthesis, characterization and nanotechnology-driven remediation technologies and materials. Special approval needed from the instructor.

512-3 Containment Fate, Transport and Remediation in Groundwater. (Same as CE 412) Mathematics of flow and mass transport in the saturated and vadose zones; retardation and attenuation of dissolved solutes; flow of nonaqueous phase liquids; review of groundwater remediation technologies; review of flow and transport models; modeling project. Special approval needed from the instructor.

516-3 Water Quality Modeling. Water quality factors and control methods. Technical, economic, social and legal aspects concerned with implementation of various engineered systems for water quality management. Case studies. Prerequisite: 418.

517-3 Industrial Waste Treatment. Theories and methods of treating industrial wastes. Case studies of major industrial waste problems and their solutions. Prerequisite: 418.

518-3 Advanced Biological Treatment Processes. The biochemical and microbial aspects of converting substrate to bacterial cell mass or products and its use in various phases of industry (both fermentation and wastewater treatment). Design of activated sludge and trickling filter plants from lab data obtained on explicit wastes from both industry and municipalities. Prerequisite: 418.

519-3 Triple E Sustainability - Environment Energy and Economy. Principles, goals, and practical applications of sustainable development; major theories and issues related to sustainability in the areas of environmental resource use, energy production, and process life cycle analysis; identify and design sustainable approaches on common areas of interest to the society, such as buildings, transportation, food, industry processes, and ecology. Special approval needed from the instructor.

520-3 Advanced Soil Mechanics. Advanced theories in soil mechanics, stress distribution in soils, seepage, consolidation, shear strength, settlement analysis and stability of slopes. Prerequisite: CE 320, ENGR 350A,B, CE 421 or concurrent enrollment.

521-3 Soil Improvement. Methods of soil stabilization, compaction, dynamic compaction, chemical treatment, compaction piling, stone columns, dewatering, soil reinforcement with stirrups, geomembranes and geogrids, ground freezing, stabilization of industrial wastes. Prerequisite: CE 320, CE 421.

522-3 Advanced Foundation Engineering. Case histories of foundation failure, bearing capacity theories, shallow foundations, deep foundations, piles under vertical and horizontal loads, pier foundations, foundations for difficult soil conditions, soil improvement. Prerequisite: 421.

523-3 Soil Dynamics. Problems in dynamic loading of soils, dynamic soil properties, liquefaction, dynamic earth pressure, foundations for earthquake and other dynamic loads. Prerequisite: CE 320 and CE 421.

524-3 Advanced Soil Testing. Review of basic laboratory tests on soils, hands-on training for performing advanced laboratory tests on soils such as: triaxial compression, flexible wall permeability, one-dimensional consolidation, and California bearing ratio, understanding ASTM standards, sample preparation, data reduction and interpretation, and development of detailed laboratory test reports. Prerequisites: CE 421, or consent of instructor.

525-3 Foundations for Dynamic Loads. Dynamic loads due to natural and man-made phenomena, damage to humans and the environment, property loss, analytical models for response analysis of foundation-soil systems for steady state, seismic and impact loads, design criteria, determination of soil properties, stiffness and damping of foundation-soil systems, design of shallow and deep foundations for various types of dynamic loads, computer applications, case histories of damage. Prerequisites: CE 421 and CE 445 or consent of instructor.

526-3 Seepage and Slope Stability Analysis. (Same as CE 426) Seepage through soils; numerical and physical modeling of two-dimensional flow; basic mechanism of slope stability analysis; analytical methods in analyzing slopes; slope stabilization. Additional project and presentation required for students taking this course instead of CE 426. Prerequisites: CE 320 or consent of instructor.

530-3 Advances in Materials and Testing. An introduction to advances in concrete technology; High strength concrete; Light-weight concrete; Cement and polymer composites; and Non-destructive testing. Fundamental concepts, manufacture, performance, testing, design methodology and applications. Prerequisite: CE 330 or equivalent or consent of instructor.

540-3 Structural Dynamics. Analysis of the dynamic response of multidegree-of-freedom framed structures. Structural idealizations. Matrix formulation. Lagrange's equations. Response calculation by mode-superposition and direct integration methods. Analysis for earthquakes. Prerequisite: 340 or consent of instructor.

542-3 Nonlinear Structural Analysis. Analysis of the nonlinear response of framed structures subjected to static and dynamic loads. Structural idealizations. Response calculation by incremental and iterative techniques. Instability phenomena of snap-through and bifurcation. Post-buckling behavior. Approximate formulations. Detection of instability under dynamic loads. Prerequisite: CE 441 or CE 551 or consent of instructor.

544-3 Advanced Design of Reinforced Concrete. Deep beams, shear friction. Slab, beam, girder systems. Monolithic joints. Retaining walls. Deflections. Length effects on columns. Two-way floor systems. Yield line theory. Torsion. Seismic design. Prerequisite: CE 444.

545-3 Advanced Steel Design. Economical use of high strength steel; behavior and design bolted and welded building connections, plate girders and composite steel-concrete beams; brittle fracture and fatigue; and low-rise and industrial-type buildings. Prerequisite: CE 442.

551-3 Finite Element Analysis. (Same as ME 565) Finite element analysis as a stress analysis or structural analysis tool. Derivation of element stiffness matrices by various means. Application to trusses, plane stress/strain and 3-D problems. Dynamic and material nonlinearity problems. Prerequisite: ENGR 350A,B and MATH 305.

552-3 Theory of Elasticity. Stress and strain equations of elasticity; equilibrium equations; compatibility equations; stress functions; applications of elasticity in solving engineering problems in two and three dimensions. Prerequisite: ENGR 350A,B and MATH 305.

553-3 Theory of Plasticity. (Same as ME 513) Criteria for onset of yielding, isotropic and kinematic strain hardening; flow rules for plastic strains; elastic plastic bending and torsion, slip line field theory; plane stress problems; limit analysis. Prerequisite: ENGR 350A,B and Mathematics 305 or consent of instructor.

554-3 Experimental Mechanics. An introduction of various experimental techniques that are commonly used to determine properties such as deformation, straining, surface contour, etc. The topics to be covered include the principles of strain gage technology, theory of photoelasticity, piezoelectric accelerometer, laser based interferometry, image processing and analysis, and reverse mechanics. The specific areas of practical application for each type of experimentation will be discussed. Prerequisite: ENGR 350A,B.

556-3 Theory of Laminate Composite Structures. Orthotropic and Anisotropic Materials, Laminated Plate Theory, Ritz Method, Galerkin's Method, bending, buckling and vibration of laminated structures. Prerequisite: ENGR 350A,B and MATH

251.

557-3 Advanced Mechanics of Materials. (Same as ME 566) Advanced topics in mechanics of materials including: elasticity equations; torsion of non-circular sections; generalized bending including curved beams and elastic foundations; shear centers; failure criteria including yielding, fracture and fatigue; axisymmetric problems including both thick and thin walled bodies; contact stresses; and stress concentration. Prerequisite: ENGR 350A,B.

558-3 Reliability in Engineering Applications. An overview of principles and methods for quantifying the uncertainty in planning, design, testing and operation of engineering systems. Topics include probability theory, random variables, multivariate distributions, regression and correlation analyses, Monte Carlo simulations, and Bayesian approaches. Concepts are illustrated with examples from various areas of engineering, with particular emphasis on civil engineering applications. Prerequisite: ENGR 351 or consent of instructor.

570-3 Sedimentation Engineering. Introduction to the transport of granular sediment by moving fluids; analysis of regional degradation, aggradation and local scour in alluvial channels; investigation of sediment sources, yield and control. Prerequisite: CE 474 or consent of instructor.

571-3 Water Resources Systems Engineering and Management. Philosophy of water resources planning; economic, social and engineering interactions related to water quantity; quantitative optimal planning methodologies for the design and operation of hydrosystems; guest lecturers; projects/case studies. Prerequisite: CE 474 or consent of instructor.

572-3 Advanced Hydraulic Design. Design and analysis of stormwater control and conveyance systems, dams, spillways, outlet works, stilling basins, culverts and other complex hydraulic systems. Prerequisite: CE 474 or consent of instructor.

573-3 Modeling of Hydrosystems. Hydraulic and hydrologic modeling; theory and application of common surface and subsurface flow models such as HEC-RAS, HEC-6, FLDWAV, DAMBRK, MODFLOW and MODPATH. Prerequisite: CE 474 or consent of instructor.

592-1 to 5 Special Investigations in Civil Engineering. Advanced Civil Engineering Topics and/or problems in (a) Structural Engineering, (b) Hydraulic Engineering, (c) Environmental Engineering, (d) Geotechnical Engineering, (e) Fluid Flow Analysis, (f) Computational Mechanics, (g) Composite Materials, and (h) Stress Analysis. Restricted to graduate standing. Special approval needed from the instructor.

593-3 Civil Engineering Project. Advanced project on topics such as case studies, engineering design, testing and analysis methods, computer modeling, or any other topic focusing on engineering practice. Detailed project report is required. Restricted to graduate standing. Special approval needed from instructor.

599-1 to 6 Thesis.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted.

Graded *S/U* or *DEF* only.

Communication Disorders and Sciences

(See Rehabilitation Institute for program description)

Communication Studies

(Formerly Speech Communication)

<http://communicationstudies.siu.edu/>

spcmdept@siu.edu

COLLEGE OF LIBERAL ARTS

Graduate Faculty:

Bardhan, Nilanjana, Professor, Ph.D., University of Ohio, 1998; 1998. Intercultural communication and public relations.

Crow, Bryan, Associate Professor, Ph.D., University of Iowa, 1982; 1981. Interpersonal communication, conversation analysis, media studies.

Daughton, Suzanne, Associate Professor, Ph.D., University of Texas-Austin, 1991; 1990. Rhetorical theory and criticism.

Engstrom, Craig L., Assistant Professor, Ph.D., Southern Illinois University Carbondale, 2010; 2015. Organizational communication, institutional theory, rhetoric, training and development, social media.

Gingrich-Philbrook, Craig, Associate Professor, Ph.D., Southern Illinois University, 1994; 1998. Performance studies, queer theory, continental philosophy, performance art.

Gray, Jonathan M., Associate Professor, Ph.D., Louisiana State University, 1999; 1999. Rhetorical theory and criticism, popular culture, communication pedagogy, folklore, cultural studies, and performance.

Griffin, Rachel A., Associate Professor, Ph.D., University of Denver, 2008; 2008. Intercultural communication, critical race theory, critical pedagogy, gendered violence.

Hinchcliff-Pelias, Mary, Associate Professor, Emeritus, Ph.D., Southern Illinois University Carbondale, 1982; 1983.

Kleinau, Marion L., Professor, *Emeritus*, Ph.D., University of Wisconsin, 1961; 1959.

Kleinau, Marvin D., Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1977; 1963.

Langsdorf, Lenore, Professor, *Emeritus*, Ph.D., State University of New York at Stonybrook, 1977; 1990.

Lanigan, Richard L., Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1969; 1974.

Pace, Thomas J., Professor, *Emeritus*, Ph.D., University of Denver, 1957; 1965.

Pelias, Ronald J., Professor, *Emeritus*, Ph.D., University of Illinois, 1979; 1981. Performance studies, performance methods, autoethnography.

Pensoneau-Conway, Sandra L., Assistant Professor, Ph.D. Southern Illinois University Carbondale, 2006; 2012. Critical communication pedagogy, intercultural communication, qualitative methods, communication and identity.

Pineau, Elyse, Associate Professor, *Emerita*, Ph.D., Northwestern University, 1990; 1990. Women's autobiography and personal narratives in performance.

Smith, William D., Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1964; 1961.

Stucky, Nathan, Professor, *Chair*, Ph.D., University of Texas-Austin, 1988; 1990. Performance studies, performance pedagogy, conversation analysis, performance ethnography.

Toyosaki, Satoshi, Associate Professor, Ph.D. Southern Illinois University Carbondale, 2005; 2008. Intercultural

communication, critical cultural studies, communication pedagogy, identity performance, cultural methodologies.

Walker, Rebecca, Assistant Professor, Ph.D., Louisiana State University, 2011; 2012. Performance and culture, performance and technology, performance and art, history of performance studies, rhetoric and pop culture, visual rhetoric, culture jamming, tourism and performance.

The Department of Communication Studies has a healthy diversity of outlooks and approaches. Our diversity is complemented by an exceptionally supportive interpersonal climate. We are committed as colleagues to effective teaching and productive scholarship. We believe that our students share these commitments, and we are most eager to recruit students who want to study in such an environment.

Our facilities include a superior laboratory for performance studies, the Marion Kleinau Theatre, computer laboratory room, Speaker's Center, library, and research carrels all housed in the department. We offer graduate assistants the opportunity for independent teaching experiences as well as the usual support duties as teaching and research assistants.

Financial Assistance

There are several forms of financial assistance available to graduate students in the Department of Communication Studies. First, there are graduate fellowships awarded on the basis of superior scholarship, which require a ten-hour per week research assignment. Second, there are several special fellowships offered annually to students who show promise of success in graduate studies even though their academic records have been only average because of economic or social disadvantages. These special fellowships also have a ten-hour per week research assignment. Third, there are graduate assistantships available which require up to 20 hours per week of service in teaching or research. Finally, there are dissertation research awards for students in their final year of work toward the Ph.D. degree.

The stipends for the above awards are competitive. All the appointments, fellowships and assistantships also include a waiver of tuition (both in-state and out-of-state) for the student, although the student is responsible for student fees. Students who hold assistantship appointments for two consecutive semesters also receive a tuition waiver for the following summer session.

Additional information may be obtained by contacting: Director of Graduate Studies, Department of Communication Studies, Mail Code 6605, 1100 Lincoln Drive, Southern Illinois University Carbondale, Carbondale, Illinois 62901-6605. Applications for fall semester assistantships should be received by January 15.

The Department of Communication Studies offers two graduate programs of instruction and research in the discipline of human communication leading respectively to the Master of Arts, and Doctor of Philosophy degrees.

Curriculum. The graduate faculty of the department offer course work in communication pedagogy, interpersonal communication, rhetoric and the philosophy of communication, gender, sexuality and communication, intercultural communication, cultural studies, performance studies, and

organizational communication.

Admissions. Applicants must meet the minimum requirements of the Graduate School and should have completed a minimum of 24 quarter or 16 semester credit hours in communication studies or related subjects. A program for remedying deficiencies in background can be arranged by the department's Graduate Committee.

Application for admission to graduate studies in communication studies should be directed to the director of graduate studies of the Department of Communication Studies. The GRE Aptitude Test is required as a condition for admission. Except for persons from English-speaking countries, international students are required by the department to have a TOEFL score of 600 (paper score) or 250 (computer score), or higher for admission. Each applicant should apply online and submit to the Department of Communication Studies three letters of recommendation from former instructors, and the Graduate School application form and other required materials. In addition, applicants for the Ph.D. degree program may furnish a research paper as evidence of research and writing ability.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Communication Studies. Applicants must pay this fee by credit card.

Acceptance for graduate study in Communication Studies is determined by the graduate committee of the Department of Communication Studies. Students who are awarded graduate assistantships to provide assistance in the instruction of the department are required to take CMST 539.

Research Style. Each student is required to write a research report, thesis, or dissertation as a requirement of the program. In all cases the writing must conform to the latest edition of *The MLA Style Manual* or the *APA Publication Manual*. In all cases the writing must conform to the current edition of the Graduate School Guidelines for the Preparation of Research Reports, Theses, and Dissertations.

Master's Degree Program

A minimum of 30 semester credit hours is required for the M.A. degree. At least 15 of these hours must be at the 500 level. A student who completes only the minimum of 30 hours of work may devote no more than 9 hours to work outside the Department of Communication Studies.

The individual student selects or is assigned a faculty adviser no later than the beginning of the second semester. The faculty adviser and the student will plan the program of study.

The requirements for the master's degree may be met by either of the following plans chosen by the student in consultation with the adviser.

Plan 1: Thesis. Each student must complete a minimum of 30 semester credit hours, with no more than six hours or fewer than three hours of thesis credit in CMST 599 counted toward the 30 hour minimum. In addition, the student must register for at least one semester hour of credit in CMST 599 during any academic term in which the services of any faculty member are utilized in the supervision of or consultation concerning the

thesis. If the student's reliance upon faculty assistance justifies, the director may require an appropriately greater number of semester hours in CMST 599. The thesis is submitted to a committee of three members of the graduate faculty, at least two of whom must be from the Department of Communication Studies. The committee must approve the prospectus and will administer an oral examination over the thesis. Students are required to submit their thesis to the Graduate School, one copy to the Department of Communication Studies, and one copy to the thesis director.

Plan 2: Research Report. Each student must complete a minimum of 30 semester credit hours, with no more than three hours or fewer than one hour of research report credit in CMST 595 counted toward the 30 hours minimum. A research report is submitted as evidence of research competence. An advisory committee consisting of the student's adviser and one other member of the graduate faculty in the Department of Communication Studies selected by the student and the adviser, will administer an oral examination over the research report before it is submitted to the Graduate School. One copy of the research report is submitted to the Graduate School, one copy to the Department of Communication Studies, and one copy to the adviser.

A student must have a graduate grade point average of 3.00 in order to be eligible for the master's degree.

Doctor of Philosophy Degree

A student must take 51 semester credit hours of course work beyond the master's degree, 9 hours of which are methodology courses. A minimum of 36 of those 51 hours must be taken within the department. In addition, 24 semester credit hours of dissertation work are required for the Ph.D. degree. Course work outside the department must be germane to one of the departmental curriculum areas for purposes of examination and dissertation research. Throughout the program of study, the student must maintain a 3.00 grade point average in all work taken. If the grade point average drops below the minimum, the student is placed on academic warning for the following two semesters.

During the last half of the second semester of course work, the student's progress shall be reviewed by the advisory committee to determine continuation, change, or termination of the program. The advisory committee for each student shall be responsible for assembling the necessary information (grades, recommendations, progress in curriculum areas, etc.) for consideration in reaching the above decision.

Advisory Committee. A three person advisory committee shall be established no later than the beginning of the second semester of graduate study to plan the program of study with each student. The chair of the committee shall act as the primary adviser and sign the graduate course request form. This advisory committee is responsible for certifying to the graduate director that the student has met all departmental requirements for admission to candidacy and has passed the Ph.D. preliminary examination.

The advisory committee and the student will plan the program of study. All students are required to take CMST 501, Introduction to Communication Studies Research and

CMST 510, Rhetorical Theory. Students selecting theater as a curriculum area must take 18 hours of communication studies courses including CMST 501 and 510; and THEA 501, THEA 504, and THEA 505.

Attendance is required at pro-seminars as part of professional development. Graduate students are encouraged to present their scholarly work.

Preliminary Examination. The student must pass a preliminary examination on his/her program of study. The preparation and administration of the examination are determined by the advisory committee in consultation with the student. The examination is taken at the end of the course work.

Dissertation. Each student must register for at least 24 semester hours of dissertation credit in CMST 600 or THEA 600. In addition, the student must register for at least one semester hour of credit in CMST 600 or CMST 601 or THEA 600 or THEA 601 during any academic term in which the services of any faculty member are utilized in the supervision of or consultation concerning the dissertation. If the student's reliance upon faculty assistance justifies, he/she may be required by the dissertation adviser to register for an appropriately greater number of semester hours.

The dissertation director shall, upon consultation with the student, be responsible for setting up a dissertation committee, supervising the dissertation, and administering the final oral examination. The dissertation committee shall approve the dissertation prospectus and pass upon the completed dissertation and oral examination. Students are required to submit an electronic copy of the dissertation to the Graduate School, one paper copy to the Department of Communication Studies, and one paper copy to the dissertation director.

Courses (CMST)

401-3 Communication Theories and Models. An advanced examination of the purposes and processes of constructing and using theories and models in communication research. Students critically analyze existing communication theories from both social scientific and interpretive paradigms in order to explicate and evaluate their implicit and explicit assumptions about human being, knowledge, and value. For graduate students and advanced undergraduates. Satisfies the CoLA Writing-Across-the-Curriculum requirement for communication studies majors. Prerequisite: CMST 230 for undergraduates or graduate standing.

411-3 Rhetorical Criticism. Designed to develop the student's ability to criticize public discourse, including speeches, written works, and the mass media. Satisfies the CoLA Writing-Across-the-Curriculum requirement for Communication Studies majors.

412-3 Environmental Rhetoric. An exploration of rhetorical structures and strategies in environmental policy, activism and public discourse. This course will trace the significant contributions rhetoric and public debate have made in the struggle to protect environments from excessive industrial and commercial exploitation. A lecture, reading and discussion course.

413-3 Visual Rhetoric. An exploration of visual messages in

public discourse and persuasive communication. This course offers tools for doing rhetorical criticism of visual messages, identifying similarities and differences between the analysis and production of verbal and visual persuasion. A lecture, readings, and discussion course.

415-6 (3,3) Topics in Gender, Sexuality & Communication. (Same as WGSS 415) An exploration of advanced theories and research in gender and sexuality from communication perspectives. Course may be repeated when topics vary.

416-3 Black Feminist Thought as Theory and Praxis. (Same as AFR 416 and WGSS 416) Explore the roots, contemporary manifestations, and current embodiments of Black feminist thought. Explore the works of Black women to engage in critical thinking and thoughtful dialogue that positions the valuable knowledge, experiences and perspectives of women of color at the center of inquiry while simultaneously discovering spaces for multicultural alliances. Prerequisite: CMST 301I or CMST 341 or consent of instructor or graduate standing.

421-3 to 9 (3,3,3) Studies in Public Address. Critical studies of speakers and issues relevant to social and political movements dominant in national and international affairs. A lecture, reading and discussion course. Students may repeat enrollment to a total of nine hours.

435-3 to 6 (3,3) Topics in Performance Studies. An exploration of advanced theories and techniques in performance studies. Topics vary and are announced in advance. Students may repeat enrollment in the course, since the topics change. Lecture, discussion, class projects.

440-3 Language, Culture, and Communication. Study of language in use in social interactions in various cultural and communicative contexts. Topics include components of language, language change and diversity, speech acts, conversational structure, dialects, gender and language, bilingual and multilingual cultures, child language acquisition, and language use in institutional contexts. Prerequisite: CMST 301I or CMST 341 or consent of instructor or graduate standing.

441-3 Advanced Intercultural Communication: Theory and Practice. Advanced study of intercultural communication in domestic and global intercultural contexts. Course incorporates intercultural communication research with specific focus on application of theory in professional contexts and in service of public advocacy and/or social justice. Prerequisite: CMST 301I (or CMST 341) or consent of instructor or graduate standing.

442-3 Psychology of Human Communication. Nature, development, and functions of verbal and nonverbal behavior; application of psychology theories and research to the communication process in individuals and groups. Emphasis on the systemic nature of communicative behavior.

443-3 General Semantics. Formulations from the works of Alfred Korzybski and from neo-Korzybskian interpreters are presented. General semantics is discussed as an interdisciplinary approach to knowledge. Relationships are made to contemporary problems in human affairs.

444-3 Studies in Language Acquisition. Research in and theories of the development of verbal and nonverbal language with attention to the maturational process. Includes investigation of social, phonological, syntactical and semantic correlates of communication development. Appropriate for advanced students interested in working with or conducting research involving

children.

445-3 Conversational Performance. Analysis of performance acts within everyday interaction: stories, jokes, laughter, teasing, etc. Application of theories of play, metacommunication and framing. Re-performance of recorded, transcribed conversations as method of exploring aesthetic dimensions of communication. Prerequisite: nine hours of Communication Studies courses or consent of instructor or graduate standing.

446-3 Sociology of Language Discourse and Signs. Introduction to sociological semiotics, especially structuralism and post-structuralism. Reference to French theorists such as Barthes, Baudrillard, Bourdieu, Certeau, Deleuze and Guattari, Greimas, Group Mu, Lacan, Lyotard and Perelman. Emphasis on the practice of discourse, language, and signs as a model for research in the human science of communicology.

447-3 Communicating Race and Ethnicity. (Same as AFR 447) Via intercultural theories and methods, this course explores histories, relationships, interactions, and recent events by positioning racial and ethnic perspectives at the center of inquiry. The course critically examines the complexities of race, racism, and ethnicity by focusing on how people communicate across racial and ethnic differences in different contexts. Prerequisite: CMST 301I or 341, or consent of instructor or graduate standing.

448-3 Intercultural Training. Introduction to communication theories and practices informing the training of individuals and groups anticipating extensive interactions with persons from differing cultural communities. The course provides content and learning opportunities aimed toward the design, development, and evaluation of effective, ethical culture-specific and culture-general intercultural training programs. Prerequisite: CMST 341 or CMST 301I or consent of instructor or graduate standing.

451-3 Political Communication. (Same as POLS 418) A critical review of theory and research which relate to the influence of communication variables on political values, attitudes, and behavior.

452-3 Interpersonal Communication and the Mass Media. A review, synthesis and analysis of communication theory and research which deals with the process, interactive nature of interpersonal and mass channels of communication. Prerequisite: CMST 401 or consent of instructor or graduate standing.

460-3 Small Group Communication: Theory and Research. A critical examination of small group theory and research in communication studies. Emphasis is given to the development of principles of effective communication and decision-making in the small, task-oriented groups. Prerequisite: CMST 261 or consent of instructor or graduate standing.

461-3 Laboratory in Interpersonal Communication I. Interpersonal communication is studied as human encounter. The philosophy and theoretical bases of existential phenomenological approaches to human communication are discussed. Projects are evolved by small groups that contribute to the understanding of human communication.

462-3 Laboratory in Interpersonal Communications II. Various theories of social and cultural change are explored. The role of interpersonal communication in the development of human consciousness is explicated. Projects are evolved by small groups that examine values and priorities of human nature and

cultural nature.

463-3 Interpersonal Conflict. Study of sources, patterns and outcomes of conflict in interpersonal relationships. Emphasis on interactive, systems-level analysis of naturally-occurring conflict episodes. Practice in managing conflicts, reframing, negotiation and mediation. Prerequisite: for undergraduates, CMST 262 or consent of instructor or graduate standing.

464-3 Compassionate Communication. Study and practical training in Nonviolent Communication and similar approaches to more effective inter- and intrapersonal communication. Using real-life experiences from political encounters and interpersonal conflicts to inner dialogue, this class offers a way to deepen peaceful connection and understanding with ourselves and others through honesty, empathy, and being “fully present” in the moment. Special approval needed from the instructor.

465-3 Philosophy of Communication. An introduction to philosophical approaches to the study of communicative interaction. Topics include the relation of meaning and conceptual structures to bodily experience and the interpretative nature of communicative interaction.

471-3 Prose Fiction in Performance. Study of prose fiction through analysis and individual performance. Satisfies the CoLA Writing-Across-the-Curriculum requirement for Communication Studies majors. Prerequisite: CMST 370 or consent of instructor or graduate standing.

472-3 Poetry in Performance. The study of poetic form through analysis and performance. Prerequisite: CMST 201, CMST 370 or consent of instructor or graduate standing.

473-3 Performance Ethnography. An exploration of culture, ritual, narrative, community and personal identity as performance. Readings, field work, and assignments focus on performance ethnography, communicative dimensions of performance and performance epistemology. Prerequisite: six hours of performance studies or consent of instructor or graduate standing.

474-3 Staging Literature. Theory and practice of staging literary texts with emphasis on adaptation and directing. Prerequisite: CMST 370 or CMST 371 or consent of instructor or graduate standing.

475-3 to 6 (3,3) Production Texts and Contexts. Advanced study related to theoretical and practical issues in performance staging with special emphasis on textual production, scripting, social contexts and performance practices. May be repeated for a total of six hours. Prerequisite: six hours of performance studies courses or consent of instructor or graduate standing.

476-3 Writing as Performance. An examination of the practical and theoretical links between composition and performance. Lectures, reading and assignments focus on performance as a means and an end to creative writing. Satisfies the CoLA Writing-Across-the-Curriculum requirement for Communication Studies majors.

480-3 Dynamics of Organizational Communication. Exploration of the communicative constitution of organizations, including the role that artifacts and stakeholder attitudes play in the production of meaning and interpretation of organizational events and practices. Uses case studies and individual research into selected aspects of organizational communication to teach principles. Prerequisite: CMST 380 or consent of the instructor.

481-3 Public Relations Cases and Campaigns. Advanced course in public relations case analysis and campaign planning. Students critique public relations campaigns created by various profit, nonprofit and agency organizations. Students also design and implement public relations campaigns from problem identification through evaluation stages. Satisfies the CoLA Writing-Across-the-Curriculum requirements for communication studies majors. Prerequisite: CMST 381 and CMST 382 with a grade of C or better or consent of the instructor.

483-3 Studies in Organizational Communication. Study of communication systems and behaviors within the organizations and their external environments. Considers relevance of communication to management operations, organizational culture, employee morale, networks, superior-subordinate relations, production, and organizational climates. Individual research into selected aspects of organizational communication. Students may repeat enrollment in this course, as the topic varies. Prerequisite: CMST 480 or consent of the instructor or graduate standing.

484-3 Social Media and Digital Communication. Advanced application of contemporary theories in communication studies, particularly those related to principles of rhetoric and persuasion, in digitally mediated environments. Course topics over the generation, management, and consumption of digital communication within social media and other Web platforms. Includes writing content strategy plans and study of tools used to curate, analyze, and interpret digital documents and information.

490-1 to 6 Communication Practicum. A supervised experience using communication skills. Emphasis on the development of performance skills in the following areas: (a) Communication pedagogy; (b) Debate; (c) Intercultural communication; (d) Interpersonal communication; (e) Organizational communication; (f) Performance studies; (g) Persuasive communication; (h) Public relations. May be repeated for credit. Undergraduates limited to a total of six hours from CMST 390, CMST 490 and CMST 491 and graduate students to three to be counted toward degree requirements. Prerequisite: twelve hours of communication studies. Special approval needed from the instructor.

492-2 to 8 Workshop in Performance Studies. Summer offering concentrating in specialized areas of performance studies. Prerequisite: CMST 201 and CMST 370 or consent of instructor, or graduate standing.

493-3 to 9 (3,3,3) Special Topics in Communication. An exploration of selected current topics in communication arts and studies. Topics vary and are announced in advance; both students and faculty suggest ideas. Students may repeat enrollment in the course, as the topic varies.

501-3 Introduction to Communication Studies Research. Survey of research methods utilized in the discipline of communication studies. Discussion of these methods as they apply to the various subject matter typologies. Introduction to basic conventions of research investigation and reporting.

503-3 Communicology as a Human Science. Introduction to the human science approach (phenomenology) to theory construction in human communication. Examination of the modality conditions for evidence (actuality, possibility,

necessity, sufficiency) and the corresponding logics (assert, problematic, apodictic, thematic) for qualitative research. Focus on the Abduction models of human communication and practice used by theorists such as Gregory Bateson, Paul Waltzlawick, Roman Jakobson, Charles S. Pierce, Maurice Merleau-Ponty and Michel Foucault.

504-3 Seminar: Empirical Phenomenological Communication Research. Review and analysis of the types of empirical phenomenological research and methods of capta/data collection relevant to the study of human communication. Prerequisite: CMST 501 and CMST 503 or consent of instructor.

505-3 Seminar: Semiotic Phenomenology and Critical-Cultural Research. Review, analysis, and application of eidetic and hermeneutic models for conducting interpretive research in the tradition of semiology and phenomenology. Focus on those qualitative approaches which use a critical-cultural context of investigation in the human sciences, especially communicology. Prerequisite: CMST 503 and 504 or consent of instructor.

506-3 Ethnography of Communication. Survey of research literature and methods in the ethnography of communication, emphasizing description of communicative practices situated in particular cultural contexts. Course includes such topics as theoretical assumptions and genres of ethnographic writing.

507-3 Ethnographic Fieldwork. Advanced study of culturally distinctive patterns of communicative conduct in particular social settings, groups and/or communities. Emphasizes fieldwork methods (e.g., participant-observation, ethnographic field notes, ethnographic interviews) and practice in the collection of data from which cultural patterns of communication can be formulated, including the analysis and interpretation of such data. This course is based in the perspective of ethnography of communication.

508-3 Autoethnography. Survey of research literature and methods in autoethnography with particular emphasis on the communicative self as a way of studying and speaking about culture. Calling upon the evocative and self-reflexive, strategies for field work and scholarly representation are explored.

509-3 Interpretive/Critical Methodologies. Survey of methodological approaches that facilitate analysis of ways discourses constitute, perpetuate, and maintain particular meanings. Objective is to identify, explicate, and practice procedures for conducting interpretive/critical communication research. Prerequisite: CMST 501 or consent of instructor.

510-3 Seminar: Rhetoric Theory. A survey of selected theories of rhetoric. Emphasis on major contributors of historical or contemporary importance.

513-3 to 9 (3,3,3) Studies in Rhetoric. An exploration of selected topics in the field of rhetoric. May be repeated with change of topic area. Topics announced prior to each offering. May be repeated up to nine hours.

515-3 to 9 (3,3,3) Communication and Gender. (Same as WGSS 515) How communicative activity creates and sustains human beings as gendered. Emphasis on gaining familiarity with contemporary research on gendering from a particular perspective (e.g., ethnography, performance, phenomenology, quantitative methods, rhetorical criticism). May be repeated when perspective varies. Perspective announced prior to each offering.

526-3 Seminar: Studies in Persuasion. The study of persuasion

in social-political contexts. Exploration of contemporary research and selected theories in persuasion. Examination of philosophical-ethical questions related to persuasion. Readings, research and discussions.

531-3-9 (3,3,3) Seminar: Communication Pedagogy. Advanced study of selected problems in communication pedagogy. Analysis of research problems and methodologies in communication pedagogy research. Topics may vary from year to year. May be repeated only if topic differs each time repeated.

533-3 Critical Communication Pedagogy. Advanced study of communication pedagogy research from a critical perspective. Foundations of critical communication pedagogy examined with special attention to current research trends, paradigmatic debates, and issues of culture and power.

535-3 Teaching as Performance. Survey of theoretical, methodological and instructional approaches to education that foreground performative ways of teaching and learning. The course provides content and learning opportunities aimed toward the development of critical, embodied and socially transformative pedagogies. Prerequisite: six hours of credit in either Communication Pedagogy or Performance Studies or consent of instructor.

537-3 Communication Pedagogy and Culture. Advanced study of communication pedagogy research from a critical/cultural perspective. Survey of research in communication pedagogy that examines culture, including such topics as intercultural/multicultural education, cultural studies and communication, as well as feminist/queer pedagogies.

539-3 Communication Studies at University Level. Analysis and practice of instructional methods. Focus on the development of instructional philosophy and skills with specific applications to teaching the introductory communication studies course.

540-3 Seminar: Language, Culture, and Semiology. Examination of communication problems and research focusing on the relation among cultural values, communication behaviors in the speech community, and social ex-change. Emphasis on the semantics and pragmatics of intercultural communication and social semiotic systems. Prerequisite: CMST 440 or CMST 441 or consent of instructor.

541-3 to 9 (3,3,3) Studies in Intercultural Communication. Advanced study of selected topics in intercultural communication. May be repeated for a total of nine hours when topics vary. Special approval needed from the instructor.

542-3 Paradigmatic Approaches to Intercultural Communication. This course provides a survey of intercultural communication studies, paying close attention to the historical development of the field. Students will engage with multiple paradigmatic approaches to intercultural communication research; mainly functionalist, interpretive, and critical. Students can also expect to reflect on how we can connect intercultural communication research to everyday practice.

543-3 Identity, Culture, and Communication. A theoretical exploration of identity performance across and in/between cultures. Draws mainly upon cultural studies, postcolonial theory, literary theory, critical globalization theory, and intercultural communication theory to provide a multidisciplinary understanding of how identity politics are negotiated in cultural contexts.

545-3 Seminar: Semiology and Semiotic Communication.

Advanced study of sign, signal, and symbol systems in the phenomenology of communication. Systematic analysis of the metatheory relationship between expression and perception as manifest in verbal and nonverbal communication systems. Emphasis on semiology as a communication theory in the human sciences. Some consideration of related theories such as structuralism, interspecies communication, human/machine communication and general systems theory. Prerequisite: CMST 440 or CMST 441 or consent of instructor.

546-3 Conversation Analysis: Pragmatics. (Same as LING 546) Study of the pragmatics of everyday conversation: sequential organization, topical coherence, speech act rules and functions, contextual frames, and background understandings. Emphasis on observational research methods and analysis of original data. Special approval needed from the instructor.

547-3 Conversation Analysis: Ethnomethodology. (Same as LING 547) Descriptive study of sequential organization of interaction. Students read research literature and learn methods for transcription and analysis in the conversation analytic tradition. Topics include openings and closings, adjacency pair organization, turn taking, overlap, assessments, pre-sequences, repair, topic, nonvocal activities, response, laughter, storytelling, argument, play and institutional contexts. Special approval needed from the instructor.

551-3 Phenomenology Seminar I: French Communicology. A critical examination of dominant problematics, thematic, and rhetoric in communication theory and praxis developed as a human science (science humaine de communicologie) by such contemporary French theorists as Barthes, Bourdieu, Foucault, Merleau-Ponty, Perelman and Ricoeur. Prerequisite: CMST 401 and CMST 461 or consent of instructor.

552-3 to 9 (3,3,3) Phenomenology II: German Communicology. Ways of studying human communication which derive their impetus, orientation, or construal of questions and answers, theories and methods, from the German intellectual (philosophical and social-scientific) tradition. Focus on (a) Hermeneutic phenomenology, (b) Frankfurt School critical theory, and (c) Phenomenological sociology/ethnomethodology. May be repeated with change of focus. Focus announced prior to each offering.

561-3 to 6 (3,3) Studies in Small Group Communication. Studies of group action, interaction and leadership designed to apply small group theory and communication theory. Emphasis on the nature of group communication as exemplified in the laboratory model or the discussion/conference model. Students may repeat enrollment to a total of six hours.

562-3 to 9 (3,3,3) Philosophy of Human Communication. (Same as PHIL 562) Study of selected topics in the philosophical study of communication. May be repeated with change in topic area. Topics announced prior to each offering.

563-3 Studies in Interpersonal Communication. An investigation of recent theories and empirical research concerning interpersonal communication. Emphasis will be placed on analyses of relational development, maintenance and change in the contexts of working relations, friendships and families. Both analytic and quantitative perspectives on interactional processes will be considered.

564-3 Family Communication. Survey of theories, research methods, and empirical studies of communication in family

contexts. Emphasis is on describing functional family processes, including parent-child communication and sibling communication across the lifespan, and influences of various types of family structures on the social interactions that occur in families.

570-3 Performance Methodologies. The examination of performance methodologies for exploring human communication. Particular attention is given to generating and reporting performance knowledge. Prerequisite: nine hours of 400-level Performance Studies courses or consent of instructor.

571-3 History and Criticism in Performance Studies. A study of social and critical trends in performance studies with emphasis on their historical development. Prerequisite: nine hours of Performance Studies or consent of instructor.

572-3 Theory and Criticism in Performance Studies. A study of the theoretical trends in performance studies and literary criticism. Prerequisite: nine hours of Performance Studies or consent of instructor.

573-3 Performance Criticism. An examination of the theoretical and practical issues surrounding the evaluation of artistic performances for interpretation, rhetoric, theatre, journalism, film and television students interested in developing their critical skills. Special approval needed from the instructor.

574-3 to 6 (3,3) Studies in Performance. An exploration of selected current topics in the field of performance studies. May be repeated for a total of six hours. Prerequisite: twelve hours of Performance Studies courses or consent of instructor.

576-3 Performance Art. The study and creation of post-modern performance. Particular attention is given to performance artists in the theatrical tradition. Prerequisite: nine hours of Performance Studies or consent of instructor.

580-3 to 9 Issues in Organizational Communication and Public Relations. Advanced study and applications related to specific issues in (a) Organizational communication, (b) Public relations, and (c) Political communication. May be repeated with change of topic area. Topics announced prior to each offering. Special approval needed from the instructor.

593-1 to 3 Research Problems in Communication. Independent research study with a theoretical focus under the tutorial supervision of a member of the graduate faculty. Special approval needed from the instructor and departmental adviser.

595-1 to 3 Research Report. One to three hours required of all non-thesis students writing a research paper. Graded *S/U* or *DEF* only.

598-0 Proseminar in Human Communication. An open forum offered each semester for the systematic discussion of contemporary research in the field of communication arts and studies. Specific content is determined by participating faculty and students. Topics will usually be related to current faculty research or dissertations in progress in the department. Graded *S/U* only.

599-1 to 6 Thesis. Minimum of three hours to be counted toward a Master's degree.

600-1 to 36 (1 to 12 per semester) Dissertation. Minimum of 24 hours to be earned for the Doctor of Philosophy degree.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum

of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Computer Science

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COLLEGE OF SCIENCE

Graduate Faculty:

Bosu, Amiangshu, Assistant Professor, Ph.D., University of Alabama, 2015; 2016. Software engineering, empirical software engineering, code review, software security, android security, malware detection, and mining software repositories.

Carver, Norman F., III, Associate Professor, Ph.D., University of Massachusetts, 1990; 1995. Multi-agent systems, sensor interpretation, machine learning.

Che, Dunren, Professor, Ph.D., Beijing University of Aeronautics and Astronautics, Beijing China, 1994; 2001. Database, data mining, cloud computing, big data management and analytics.

Cheng, Qiang, Associate Professor, Ph.D. University of Illinois, 2002. Pattern recognition, machine learning, biomedical and healthcare informatics, image processing.

Danhof, K. J., Professor, *Emeritus*, Ph.D., Purdue University, 1969; 1969.

Gupta, Bidyut, Professor, Ph.D., University of Calcutta, 1986; 1988. Distributed systems, fault-tolerant computing, mobile communication, routing algorithms, peer-to-peer networks.

Hexmoor, Henry, Associate Professor, Ph.D., University of Buffalo, 1996; 2006. Artificial intelligence, Multi-agent systems, cognitive science, mobile robotics, knowledge representation and reasoning.

Hou, Wen-Chi, Professor, Ph.D., Case Western Reserve University, 1989; 1989. Statistical databases, query optimization, data stream processing, spatial data structures, XML databases, big data.

Houshmand, Shiva, Assistant Professor, Ph.D., Florida State University, 2015; 2015. Authentication, Usable security, Information security, Computer and Network security and Digital forensics.

Mark, Abraham M., Professor, *Emeritus*, Ph.D., Cornell University, 1947; 1950.

McGlinn, Robert J., Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1976; 1981.

Mogharreban, Namdar, Associate Professor, Ph.D., Southern Illinois University Carbondale, 1989; 1999. Computer training, decision making, decision science, Learning objects, e-learning.

Phillips, Nicholas C.K., Associate Professor, *Emeritus*, Ph.D., University of Natal, 1967; 1988.

Rahimi, Shahram, Professor and *Chair*, Ph.D., University of Southern Mississippi, 2002; 2002. Computational intelligence, soft computing, multi-agent systems, distributed systems.

Sinha, Koushik, Assistant Professor, Ph.D., Jadavpur University, 2007; 2015. Mobile and wireless sensor networks, cloud computing and social computing, resource allocation and task scheduling.

Wainer, Michael S., Associate Professor, *Emeritus*, Ph.D., University of Alabama at Birmingham, 1987; 1988.

Wright, William E., Professor, *Emeritus*, D.Sc., Washington University, 1972; 1970.

Zargham, Mehdi R., Professor, *Emeritus*, Ph.D., Michigan

State University, 1983; 1983.

Zhu, Michelle, Associate Professor, Ph.D., Louisiana State University, 2005; 2006. Grid and cloud computing, high performance computing, remote visualization.

The Department of Computer Science offers a graduate program leading to the Master of Science and Doctor of Philosophy degree in computer science. For admission procedures to these degree programs refer to the Graduate School or department website (www.cs.siu.edu).

A nonrefundable \$50.00 application fee must be submitted with the Graduate School's online application for Admissions to Graduate Study in Computer Science. Applicants must pay this fee by credit card.

Decisions concerning the admission of students to and retention of students in the graduate program will be made by the department faculty subject to the requirements of the Graduate School.

Master of Science Degree in Computer Science

Admission. The evaluation of applicants for admission is based primarily on the student's academic record with particular attention being given to past performance in relevant undergraduate course work. Applicants are expected to have a substantial background in undergraduate computer science courses covering high level and assembly language programming, data structures, computer organization, logic design as well as discrete mathematics, calculus, and linear algebra. The applicant is expected to have completed course work in the above subject areas prior to admission. Normally, a GPA of at least 3.0/4.0 is required by the Department of Computer Science.

Requirements. A student who has been admitted to the graduate program in Computer Science can meet the requirements for the Master of Science degree by completing 30 hours of graduate credit subject to the following constraints:

1. Students must take 6 hours of Computer Science coursework from the approved courses for each of the following three categories:

Computer Science Theory

Software Development/Engineering

Computing Systems Technologies

(This requirement accounts for at least 18 hours of the required 30 hours of total graduate credit.)

The approved courses for each category are:

Computer Science Theory:

410, 437, 438, 447, 449, 451, 455, 510, 553, 555, 586

Software Development/Engineering:

412, 420, 435, 485, 487, 520, 585

Computing Systems Technologies:

401, 406, 408, 416, 430, 436, 440, 514, 530, 540

Additional courses may be allowed as appropriate, subject to Graduate Program Director approval.

2. The 30 hours of graduate work must include at least four 500-level CS lecture courses.
3. If a student believes they need to take a course from another academic unit at the University in order to gain specific

knowledge for their thesis or project work, they must request approval from the Graduate Program Director prior to registering for such a course. The request must include an explanation of why the course is necessary for their program. Approval will be granted only if the justification is deemed adequate. No more than 3 hours of credit toward the 30 hour requirement will be given, and such courses must be at the 400- or 500-level only.

4. Students are required to choose either a thesis or non-thesis program:

Thesis Option

A student must complete 6 credit hours of CS 599 Thesis, in 3 credit hour segments taken for two semesters and 24 credit hours of lecture courses. The student is eligible to take the course CS 598 (must be in industry only). This CS 598 course will be considered equivalent to 3 credit hours of thesis (subject to the approval of the supervising faculty).

Non-Thesis Option

A student must take 27 credit hours of lecture courses. In addition, the student will take CS 598 Graduate Project under the supervision of a faculty member.

Doctor of Philosophy Degree in Computer Science

Admission. Subject to meeting the admission requirements of the Graduate School, admission requirements for the Ph.D. in computer science consist of:

1. A master's degree in computer science or a related field with a minimum GPA of 3.25/4.0.
2. Graduate Record Examination (GRE) general test scores. It is recommended that results from the GRE subject area in computer science or a related area be included.
3. In exceptional cases, high achieving students with only bachelor degrees will be admitted to the program. Each student, in addition to the Ph.D. program course requirements, must complete at least 15 semester hours of approved computer science courses including CS 401, CS 420, CS 455, and two 500-level lecture courses, with a minimum accumulated GPA of 3.25/4.0 in those courses. If a specific course, or its equivalent, is already part of the student's academic background, an alternate course will be submitted.

Each applicant is reviewed and evaluated on an individual basis. The evaluation of applicants for admission is based primarily on the student's academic record and area of research interest. Application materials should include evidence of scholarly ability and/or achievement (e.g. awards, scholarships, work experience, recommendation letters, and published research papers). Only those who best meet the research goals and objectives of the doctoral program will be selected for admission.

Requirements. The student must fulfill the requirements for the departmental Qualifying Examination within three years of enrollment in the doctoral program. The Qualifying Examination is organized and administered by the student's academic advisor. The faculty prepares a written test based on at least two areas of concentration related to the student's intended dissertation area. Questions will be drawn from regularly scheduled 400 and 500-level graduate courses at SIU. The grade for the exam will

be on a Pass or Fail basis for each subject area. If a student fails to pass any subject area of the written examination, a second chance is given for the failed topic test. Students who fail the Qualifying Examination after two attempts will be dismissed from the Ph.D. program.

To fulfill the course requirements of the Ph.D. program, the student must complete at least 24 credit hours of 400/500-level courses and 24 credit hours of CS 600 Dissertation research, all of which are subject to the following constraints:

1. The course work must include two one-credit hour seminar courses, six credit hours from an approved list of computer science 400/500-level courses, and six elective credit hours of CS 500-level courses.
2. The student must file a request with the Department to appoint a dissertation committee to supervise the remaining doctoral work. This committee will consist of five graduate faculty members, one or two of whom will be from a graduate program outside the Department, one preferably from outside this University. The student's dissertation advisor will serve as the chair of this committee.
3. Each student should complete a course of study as determined by the student's dissertation committee.
4. The course of study must include a minimum of six credit hours of 400/500-level courses from academic departments other than computer science. These courses must be selected from a list approved by the Department.
5. Having passed the qualifying exams and after completion of most of the course requirements, a student will begin working on a dissertation proposal. The next step will be a Preliminary Examination consisting of an oral test on the student's proposed research topic. The student will pass the Preliminary Examination only if the members of the committee, with at most one exception, judge the performance of the student's oral examination to be satisfactory. In the event the student's performance is unsatisfactory, the committee will reschedule the exam for a later time. A student who fails the reexamination will be dismissed from the Ph.D. program.
6. A student will be officially admitted to candidacy for the Ph.D. degree after passing the Preliminary Exam and upon completion of all course work. The student must then complete 24 credit hours of dissertation credit, restricted to nine hours per semester. When the research is complete and the dissertation is written, a final oral examination will take place to determine if the research conducted is worthy of the Ph.D. degree. The dissertation must conform to high literary and scholastic standards and comply with all the relevant requirements of the Graduate School. The dissertation must represent original research of good quality. From the dissertation, the candidate should publish (or have accepted for publication) a minimum of two articles in peer-reviewed journals. The candidate must be listed as the primary author of at least one of these journal articles.
7. Each candidate must pass a final oral exam over the candidate's dissertation, conducted by the candidate's dissertation committee. The dissertation will be accepted

provided the dissertation advisor and at least three of the other four members of the committee so agree.

8. Degree requirements, graduation, and time limits are subject to the general guidelines of the Graduate School.

Courses (CS)

401-3 Computer Architecture. Review of logical circuit design. Hardware description languages. Algorithms for high-speed addition, multiplication and division. Pipelined arithmetic. Implementation and control issues using PLA's and microprogramming control. Cache and main memory design. Input/Output. Introduction to interconnection networks and multiprocessor organization. Prerequisite: 320 with a grade of C or better or graduate standing.

402-3 Theory and Applications of Computer Aided Design. A study of algorithmic techniques, which solve high complexity design rules. Graph algorithms and formulations, randomized solutions, techniques from operations research and statistics, computational geometry algorithms and data structures are introduced. The techniques are mainly applied on the physical design/automation problem for integrated circuits and systems. Prerequisite: 315 and 330 each with grade of C or better or graduate standing.

404-3 Autonomous Mobile Robots. This course is a comprehensive introduction to modern robotics with an emphasis on autonomous mobile robotics. Fundamentals of sensors and actuators as well as algorithms for top level control are discussed. Multi-robotics and human-robot interaction issues are explored. A group project is an integral part of this course. Prerequisite: CS 330 with a grade of C or better or graduate standing. Lab Fee: \$125.

406-3 Basic Linux System Administration. This course will be an introduction to the administration of Linux systems, with emphasis on security for networked systems. Topics to be covered include: installation and configuration of Linux distributions, typical maintenance activities, and security measures for networked systems. Students will have access to lab machines for hands on practice. Prerequisite: 306 with a grade of C or better or graduate standing.

407-3 Advanced Linux/UNIX Programming. This course builds on the knowledge gained in CS 306, to prepare students to do advanced development on Linux/UNIX platforms. The topics studied are critical for achieving high performance in large-scale, high-load network software systems. These topics include development techniques such as profiling, concurrent programming and synchronization, network programming for high-load servers, advanced I/O alternatives and, IPC such as shared memory. The course will involve the study of code from Open Source projects like Apache and Nginx. The focus will be on the C language, but other languages will also be considered. Students must complete a significant network software project. Prerequisites: CS 306 and CS 335 with grades of C or better, or graduate standing with C language & Linux system programming experience.

408-3 Applied Cryptography. This course is a comprehensive introduction to modern cryptography, with an emphasis on the application and implementation of various techniques for achieving message confidentiality, integrity, authentication and

non-repudiation. Applications to Internet security and electronic commerce will be discussed. All background mathematics will be covered in the course. Prerequisite: CS 330 with a grade of C or better and MATH 221 or graduate standing.

410-3 Computer Security. A broad overview of the principles, mechanisms, and implementations of computer security. Topics include cryptography, access control, software security and malicious code, trusted systems, network security and electronic commerce, audit and monitoring, risk management and disaster recovery, military security and information warfare, physical security, privacy and copyrights, and legal issues. Prerequisite: 306 with a grade of C or better or graduate standing.

412-3 Programming Distributed Applications. This course uses advanced features of the Java programming language to develop networked, distributed, and web-based applications. Topics covered include, but are not limited to, sockets, datagrams, the Java security model, threads, multi-tier architectures, Java RMI, Java database connectivity, and Java-based mobile agents. Prerequisites: CS 306 with a grade of C or better or graduate standing.

416-3 Compiler Construction. Introduction to compiler construction. Design of a simple complete compiler, including lexical analysis, syntactical analysis, type checking and code generation. Prerequisite: 306 and 311 each with a grade of C or better or graduate standing.

420-3 Distributed Systems. A top-down approach addressing the issues to be resolved in the design of distributed systems. Concepts and existing approaches are described using a variety of methods including case studies, abstract models, algorithms and implementation exercises. Prerequisites: CS 335 or graduate standing.

425-3 Principles of Virtualization and Cloud Computing. Cloud Computing (CC) represents a recent major strategic shift in computing and Information Technology. This course explores fundamental principles, foundational technologies, architecture, design, and business values of CC. Understanding will be reinforced through multiple angles including: analysis of real world case studies, hands-on projects and in-depth study of research developments. Prerequisites: CS 330 with a grade of C or better or graduate standing.

430-3 Database Systems. The course concentrates on the relational model and includes several query languages. Topics covered include normalization, database design, catalogs, transaction support, concurrency control, integrity support, backup and recovery, and security. Projects involve the use of both personal and enterprise database systems. Prerequisite: CS 330 with a grade of C or better or graduate standing.

435-3 Software Engineering. Principles, practices, and methodology for development of large software systems. Object-oriented principles, design notations, design patterns and coping with changing requirements in the software process. Experiences with modern development tools and methodologies. A team project is an integral part of this course. Prerequisite: 330 with a grade of C or better; 306 with a grade of C or better recommended or graduate standing.

436-3 Artificial Intelligence I. Search and heuristics, problem reduction. Predicate calculus, automated theorem proving. Knowledge representation. Applications of artificial intelligence. Parallel processing in artificial intelligence. Prerequisite: 311

and 330 each with a grade of *C* or better or graduate standing.

437-3 Machine Learning and Soft Computing. An introduction to the field of machine learning and soft computing. It covers rule-based expert systems, fuzzy expert systems, artificial neural networks, evolutionary computation, and hybrid systems. Students will develop rule-based expert systems, design a fuzzy system, explore artificial neural networks, and implement genetic algorithms. Prerequisite: CS 330 with a grade of *C* or better or graduate standing.

438-3 Bioinformatics Algorithms. This course is an introductory course on bioinformatics algorithms and the computational ideas that have driven them. The course includes discussions of different techniques that can be used to solve a large number of practical problems in biology. Prerequisite: 330 with a grade of *C* or better or graduate standing.

440-3 Computer Networks. Design and analysis of computer communication networks. Topics to be covered include queuing systems, data transmission, data link protocols, topological design, routing, flow control, security and privacy and network performance evaluation. Prerequisite: CS 330 with a grade of *C* or better; 306 recommended.

441-3 Mobile and Wireless Computing. Concepts of mobile and wireless systems are presented. These concepts include, but are not limited to, Routing and Medium Access for Mobile Ad hoc and Wireless Sensor Networks, Mobile IP, Wireless LAN and IEEE 802.11. Hands-on group lab experience is an integral component in the course. Prerequisite: 330 with a grade of *C* or better, or consent of the instructor or graduate standing.

447-3 Introduction to Graph Theory. (Same as Mathematics 447) Graph theory is an area of mathematics which is fundamental to future problems such as computer security, parallel processing, the structure of the World Wide Web, traffic flow and scheduling problems. It also plays an increasingly important role within computer science. Topics include: trees, coverings, planarity, colorability, digraphs, depth-first and breadth-first searches. Prerequisite: Math 349 with *C* or better.

449-3 Introduction to Combinatorics. (Same as Mathematics 449) This course will introduce the student to various basic topics in combinatorics that are widely used throughout applicable mathematics. Possible topics include: elementary counting techniques, pigeonhole principle, multinomial principle, inclusion and exclusion, recurrence relations, generating functions, partitions, designs, graphs, finite geometry, codes and cryptography. Prerequisite: Mathematics 349 with *C* or better.

451-3 Theory of Computing. The fundamental concepts of the theory of computation including finite state acceptors, formal grammars, Turing machines and recursive functions. The relationship between grammars and machines with emphasis on regular expressions and context-free languages. Prerequisite: 311 and 330 each with a grade of *C* or better or graduate standing.

455-3 Advanced Algorithm Design and Analysis. An in-depth treatment of the design, analysis and complexity of algorithms with an emphasis on problem analysis and design techniques. Prerequisite: CS 330 with a grade of *C* or better or graduate standing.

471-3 Optimization Techniques. (Same as Mathematics 471) Introduction to algorithms for finding extreme values of

nonlinear multivariable functions with or without constraints. Topics include: convex sets and functions; the arithmetic-geometric mean inequality; Taylor's theorem for multivariable functions; positive definite, negative definite, and indefinite matrices; iterative methods for unconstrained optimization. Prerequisite: Math 221 and 250 with *C* or better.

472-3 Linear Programming. (Same as Mathematics 472) Introduction to finding extreme values of linear functionals subject to linear constraints. Topics include: recognition, formulation, and solution of real problems via the simplex algorithm; development of the simplex algorithm; artificial variables; the dual problem and duality theorem; complementary slackness; sensitivity analysis; and selected applications of linear programming. Prerequisite: Math 221 with *C* or better.

475-3 Numerical Analysis I. (Same as Math 475) Introduction to theory & techniques for computation with digital computers. Topics include: solution of nonlinear equations; interpolation & approximation; solution of systems of linear equations; numerical integration. Students will use MATLAB to study the numerical performance of the algorithms introduced in the course. Prerequisites: Math 221 and Math 250 with *C* or better.

476-3 Numerical Analysis II. (Same as Math 476) Continuation of CS 475. Topics include: solution of ordinary differential equations; computation of eigenvalues and eigenvectors; and solution of partial differential equations. Students will use MATLAB to study the numerical performance of the algorithms introduced in the course. Prerequisites: Math 305 and Math 475 with *C* or better.

480-3 Computational Statistics II. This course utilizes computational and graphical approaches to solve statistical problems. A comprehensive coverage on modern and classical methods of statistical computing will be given. Case studies in various disciplines such as science, engineering and education will be discussed. Various topics such as numerical integration and simulation, optimization and maximum likelihood estimation, density estimation and smoothing as well as re-sampling will be presented. Students will be able to create graphical and numerical display based on their data analysis results using R programming language. Prerequisites: MATH 250 and CS 306 or CS 330 with a grade of *C* or better or graduate standing.

484-3 User Interface Design and Development. Problems and processes in the design of highly usable systems. Understanding stakeholders, requirements, tasks, prototyping, evaluation, guidelines and design process and heuristics. Interactive software concepts and implementation considerations. A group project is an integral part of this course. Prerequisite: 306 with a grade of *C* or better or graduate standing.

485-3 Computer Graphics. Principles and techniques of computer graphics. Interactive graphics software development using a modern graphics standard. Topics include: primitives, transforms, clipping, modeling, viewing, rendering, texture, animation and ray tracing. A group project is an integral part of this course. Prerequisite: 306 with a grade of *C* or better; MATH 150 and 221 are recommended or graduate standing.

487-3 Software Aspects of Game Development. This course focuses on software implementation and development aspects of game production including: software process, system architecture, frameworks, entity management and interaction

design, game design, production and business issues as well as technical foundations in graphics modeling and rendering, collision detection, physics, artificial intelligence, and multiplayer techniques. Prerequisite: 330 with a grade of C or better or graduate standing.

491-1 to 6 (1 to 3 per topic) Special Topics. Selected advanced topics from the various fields of computer science. Special approval needed from the instructor.

492-1 to 6 (1 to 3 per semester) Special Problems. Individual projects involving independent work. Special approval needed from the department.

493-1 to 4 Seminar. Supervised study. Preparation and presentation of reports. Special approval needed from the instructor.

501-3 Advanced Computer Architectures. Hardware and software elements of multiprocessors, multicomputers, pipeline and array machines, data flow architecture and other state-of-the-art architectures. Design principles related to machine structures, interconnection networks, control software and hardware, data storage and access. Prerequisite: CS 401.

503-3 Fault-Tolerant Computing Systems. An introduction to different aspects of fault-tolerance in computing systems. Redundancy techniques with an emphasis on information redundancy, software fault-tolerance, coding techniques, algorithm-based fault-tolerance, fault-tolerant interconnection network architecture, DFT techniques, and quantitative evaluation methods. Prerequisite: CS 401.

510-3 Wireless and Network Security. Advanced security concepts of distributed systems and wireless networks are presented. Topics include IEEE 802.11 security, Wireless Encryption and Authentication, Key Management in Networks, Distributed Denial of Service Attacks, Routing Security, Intrusion Detection and Mobile Code Security. Prerequisite: CS 410 with a grade of C or better or consent of the instructor.

511-3 Formal Specification of Programming Languages. A survey of modeling techniques and Meta languages for the formal specification of the syntax and semantics of high-level programming languages. Prerequisite: 311.

512-3 Declarative Programming. An advanced level course on nonprocedural programming with emphasis on logic programming, pure functional programming, and the characteristics of the declarative style common to these two paradigms. Topics include logic programming, functional programming, implementation consideration for each along with current research topics in the areas. Prerequisite: 311.

514-3 Advanced Operating Systems. Rigorous treatment of advanced topics in operating systems. Multiprocessors and distributed operating systems. Highly concurrent machines. Performance analysis of memory management and scheduling algorithms. Recovery techniques in distributed computation. Security in operating systems. Prerequisite: 335 with a grade of C or better.

516-3 Advanced Compilers. A continuation of 416 including advanced topics in lexical and syntax analysis, error recovery, semantic analysis, code optimization and compiler compilers. Prerequisite: CS 416.

520-3 Advanced Topics in Parallel & Distributed Computing. An advanced treatment of parallel and distributed computing; review of hardware and software considerations for parallel

computation; development and analysis of parallel algorithms (with particular attention to the communication and synchronization costs associated with parallel algorithms); effect of granularity on performance; a comparison of the parallel and distributed programming paradigms including a detailed study of the central features of each approach; software systems for distributed computing including exposure to one or more distributed programming environments; the direction of parallel computing as suggested by recent, high level parallel languages; parallelizing serial programs; parallelizing compilers; future directions of parallel and distributed computing systems. The course will include a student project. Prerequisite: 420.

530-3 Advanced Database Systems. A detailed treatment of advanced topics in database systems including, but not limited or restricted to, relational database theory, query optimization, recovery techniques, concurrency control, distributed database systems, security and integrity and database machines. Prerequisite: CS 430.

532-3 to 6 Topics in Information Systems. A detailed study of two or three topics relevant to information systems. Topics may include but are not limited to sorting, searching, information retrieval and automatic text processing, database security and encryption, distributed databases and data communication. Prerequisite: CS 430. Special approval needed from the instructor.

533-3 Data Mining and Big Data Analysis. This course provides a series of comprehensive and in-depth lectures on the core techniques in data mining and knowledge discovery; addresses the unique issues of big data; and discusses potential applications of data mining particularly on big data analysis. Major topics include: data preparation, association mining, classification (and prediction), clustering, characteristics and challenges of big data, and strategies of big data mining and analysis. Prerequisites: CS 330 and 430 with grades of C or better or consent of instructor.

534-3 Big Data Management and Analytics. This course provides comprehensive and in-depth discussions of big data management and analytics. Main subjects include computation and programming models, management and analytics algorithms, and platforms/frameworks especially designed for big data. The objective of this course is to equip students with the ability to understand, use, and build big data management and analytics systems or tools. Prerequisites: CS 430 with a grade of C or better or graduate standing.

536-3 Artificial Intelligence II. Theorem proving, the Resolution Principle, strategies, and achievements. Program verification. Natural language processing. Other selected topics. Prerequisite: 436.

537-3 Advanced Topics in Expert Systems. This course is designed to provide students with advanced topics in expert systems theory. Topics covered include: knowledge representation, methods of inference, reasoning under uncertainty, and inexact reasoning (fuzzy logic). A practical introduction to expert systems programming serves to reinforce and clarify the theoretical concepts. Prerequisite: 330 or consent of instructor.

538-3 Game Theory in Networks. Game theoretic concepts apply whenever actions of several players are interdependent.

This course will provide an introduction to classic game theory and strategic thinking including dominance, Nash equilibrium, and stability. Social choice, social learning, and online mechanism design are then discussed. We will examine how game theoretic concepts can be used in developing reasoning strategies; i.e., algorithms. Application of game theoretic framework to telecommunication and human networks is an integral part of this course. Restricted to graduate standing or consent of instructor.

539-3 Agents and Multiagent Systems. This is an advanced treatment of fundamental concepts in the design of intelligent autonomous agents and agent systems. Classic agent theories, architectures, algorithms, and languages are discussed. An agent-based project is an integral part of this course. Restricted to graduate standing or consent of instructor.

540-3 Advanced Computer Networks. Topics include routing protocols used in internet; data compression techniques; telecommunication systems – its services, architecture and protocols; high speed networks; routing protocols in mobile ad-hoc networks; and a detailed performance analysis of different window flow control and congestion control mechanisms using queuing theory. Prerequisite: 440 with a grade of C or better, or consent of the instructor.

553-3 Formal Languages and Automata. The Chomsky hierarchy of formal grammars and the corresponding classes of automata. Turing machines and basic concepts of computability. Recursive and recursively enumerable languages. Closure properties. Undecidable problems about Turing machines and context-free languages. Deterministic context-free languages and the construction of LR parsers. Prerequisite: CS 451.

555-3 Computability and Complexity. Turing machines and other models of computation. Computable functions. Church's thesis. Solvable and unsolvable problems. Introduction to complexity theory including the classes P and NP. Polynomial time approximation algorithms for NP-complete problems. Prerequisite: CS 451.

572-1 to 12 Advanced Topics in Numerical Analysis. (Same as MATH 572) Selected advanced topics in numerical analysis chosen from such areas as: approximation theory; spline theory; special functions; wavelets; numerical solution of initial value problems; numerical solution of boundary value problems; numerical linear algebra; numerical methods of optimization; and functional analytic methods. Special approval needed from the instructor.

585-3 Advanced Topics in Computer Graphics. Study of computer graphics for realistic image synthesis. Object modeling and associated data structures. Advanced rendering techniques such as raytracing and radiosity. Efficiency considerations. Image composition and compression. Current advances and research problems in realistic computer graphics. Prerequisite: CS 485.

586-3 Pattern Recognition and Image Processing. An introduction to the area of computer vision for the purpose of restoration, segmentation, encoding, analysis and recognition of pictures. Topics include: image transforms, edge detection, smoothing, filtering, pseudo-coloring, syntactic methods in scene analysis, parametric decision theory, non-parametric decision theory, linear discriminant functions, parameter estimation, supervised learning and unsupervised learning.

Prerequisite: CS 220 and MATH 380 or consent of instructor.

590-1 to 6 Readings. Supervised readings in selected subjects. Graded *S/U* only. Special approval needed from the instructor and department.

591-1 to 9 (1 to 3 per topic) Special Topics. Selected advanced topics from the various fields of computer science. Special approval needed from the instructor..

593-1 to 4 Seminar. Preparation and presentation of reports. Graded *S/U* only. Special approval needed from the instructor.

598-3 Graduate Project. A practical exercise in the design, implementation, documentation and deployment of a project. A project may be completed through internship, work/study, or a supervised project. For Ph.D. students only, an internship could include face-to-face or online teaching.

599-3 to 9 Thesis. Special approval needed from the instructor and department.

600-1 to 9 Doctoral Dissertation. Dissertation research. Hours and credit to be arranged by the student's academic advisor. Graded *S/U* only. Restricted to admission to Ph.D. in computer science program.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or graduate project. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis or graduate project hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Counselor Education

<http://epse.ehs.siu.edu/>

COLLEGE OF EDUCATION AND HUMAN SERVICES

Graduate Faculty:

Asner-Self, Kimberly K., Associate Professor, Ed.D., George Washington University, 1999; 1999.

Bardo, Harold R., Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1972; 1968.

Bradley, Richard W., Professor, *Emeritus*, Ph.D., University of Wisconsin, 1968; 1968.

Brown, Beverly M., Professor, *Emerita*, Ph.D., University of Iowa, 1974; 1974.

Champe, Julia, Assistant Professor, Ph.D., Idaho State University, 2004; 2008.

Cody, John J., Professor, *Emeritus*, Ph.D., University of Wisconsin, 1961; 1965.

Neffisatu, Dambo, Instructor, University of Central Florida.

Glace, Dorea, Assistant Professor, Ph.D., Ohio University, 2012; 2012.

Pender, Debra A., Associate Professor, Ph.D., Southern Illinois University Carbondale, 2006; 2016..

Prichard, Karen K., Associate Professor, *Emerita*, Ph.D., Kent State University, 1980; 1980.

White, Lyle J., Professor, Ph.D., University of Iowa, 1988; 1989.

The Department of Counseling, Quantitative Methods, and Special Education offers graduate studies leading to a (i) M.S. Ed in counselor education and (ii) Ph.D. with a major in education with a concentration in counselor education. The purposes of these graduate programs are to prepare professional counselors to engage in the practice and research in their program areas of interest. Where appropriate, degree requirements will satisfy licensure requirements. Programs are monitored to be in line with standards set forth by the North Central Association, the National Council for Accreditation of Teacher Education, and the Council for Accreditation of Counseling and Related Educational Programs (CACREP).

For the Ph.D. degree, individualized courses of study are linked to the teaching and research capabilities of the faculty. Sufficient latitude is provided so that students in concert with their adviser and committee plan programs that capitalize on student interests and faculty capabilities.

Master of Science in Education

Academic experiences leading to the Master of Science in Education degree are provided through a concentration in counselor education with three program areas in clinical mental health counseling, school counseling, and marriage, couple and family counseling. Graduates from these programs are prepared to pursue advanced graduate studies or assume roles as professional counselors in schools, colleges, and other agencies or both.

Admission and Retention. Students seeking admission to master's degree studies in the department must apply to and meet requirements for admission to the Graduate School and be approved by the Department of Counseling, Quantitative

Methods, and Special Education. Scores from the Graduate Record Examination (GRE), an undergraduate grade point average of 2.7 ($A = 4.0$), letters of recommendation, and evidence of successful experience or commitment to the profession are required for admission. Each application is considered on an individual basis. Professional qualifications, graduate courses taken, and student goals are also considered.

The adviser, along with the faculty of the program area, is responsible for reviewing student progress each semester. Students are required to maintain a 3.0 grade point average and to be progressing toward their professional goals within the guidelines formulated in the advisement process. Failure to make progress or violations of department, college, or Graduate School regulations may result in dismissal from the program.

In the event a student is believed to be in violation of ethical or professional behavior that is a serious threat to client welfare, faculty or the clinical supervisor may prohibit the student from seeing clients prior to the review procedure. This 10 step process is articulated in the Master's Handbook. All persons involved with the student's practicum or internship will be immediately informed of the decision. In the event of a serious form of unprofessional behavior has occurred, remediation may not be an option. If the faculty believe formal actions are immediately needed, the review procedure moves directly to a formal hearing with the student. Lack of participation in this hearing by the student shall result in removal of the student from the program.

Specific information about programs and how to apply may be obtained by calling 618-536-7763 or writing to: Coordinator Counselor Education, Mail Code 4618, Southern Illinois University, Carbondale IL 62901.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Counselor Education. Applicants must pay this fee by credit card.

Program Requirements.

The master's degree in counselor education is approved by the Council for Accreditation of Counseling and Related Educational Programs (CACREP) in three program areas: Clinical Mental Health Counseling, School Counseling, and Marriage, Couple and Family Counseling. Clinical Mental Health is a 61 semester credit hour program; School Counseling is 56, and Marriage, Couple and Family is 65. These programs prepare students to work with children and adults in mental health settings, elementary and secondary schools, higher education, and other agencies or settings. Emphasis is placed on child, adolescent, adult, family and couples counseling.

Central to any program is a unified curriculum rather than a collection of courses. CACREP-mandated curriculum areas include: Professional Identity, Social and Cultural Diversity, Human Growth and Development, the Helping Relationship, Group Work, Assessment, Research and Evaluation, and Clinical Instruction. In addition, students are required to complete a thesis or 6 credit hours of approved research course work. While students complete course work in all the CACREP areas, specific courses are dependent on area of emphasis and career goals.

The Clinical Mental Health Counseling and Marriage, Couple, and Family Counseling programs prepare students

to meet the educational requirements for licensure in Illinois. The School Counseling program fulfills requirements of the entitlement program for licensure in Illinois.

Doctor of Philosophy Degree in Education

Advanced studies leading to a Ph.D. degree are offered by the Department of Counseling, Quantitative Methods, and Special Education. The Ph.D. program in Counselor Education and Supervision is a concentration area for the degree Ph.D. in Education. Individualized programs of study, based on a core foundation, are required for each candidate. Students along with their doctoral committee plan programs related to student background and interests, the professional requirements of the program, and the professional competencies of the faculty.

Application. Students must apply to the Coordinator of Counselor Education, Department of Counseling, Quantitative Methods, and Special Education, Southern Illinois University, Mail Code 4618, Carbondale IL 62901. Phone: 618-536-7763. Specific questions about programs and how to apply should be directed to the address identified above or by phone.

A non-refundable application fee of \$50.00 must be submitted with the application. Attach your check or money order, payable to Southern Illinois University, to the top of the application form. Do not send cash. Only checks or money orders payable to United States banks will be accepted.

Admission and Retention. Applications are reviewed by the program faculty and recommendations forwarded to the College of Education and Human Services and the Graduate School. Test scores from the Graduate Record Examination are required. A personal interview with a candidate is required. Admission to the program is dependent on (1) the applicant's grades in their master's program, (2) GRE scores, (3) prior course work, (4) letters of recommendation, and (5) availability of qualified faculty to supervise the applicant's doctoral work. Applicants are expected to have prior course work from or equivalent to a CACREP accredited master's degree program in counseling. Applicant's who do not have a qualifying master's degree will have their graduate transcripts reviewed to determine what courses will be required before they can begin the doctoral curriculum. In some cases completing a master's degree in counselor education may be required.

Student's academic and professional performances are assessed throughout their time in the program. The faculty regularly communicate with one another regarding individual student performance, as part of best practices in instruction, professional development and gate-keeping. As counselor educators in training, students are expected to conduct themselves in a manner that is congruent with the role of a professional counselor educator. This includes presentation of self on and off campus, all forms of communication, including in person and electronic, on-line presence, and overall comportment.

The faculty also conduct a formal annual review of all students, at minimum at the one-year point in students' course of study. In addition to a review of a student's compliance with the policies set forth by the College of Graduate School, students are assessed on 5 criteria: cumulative graduate GPA; personal and social maturity; interpersonal relations; written

and oral communication skills, and professional and ethical conduct. Students must obtain a minimum average rating of satisfactory (3) in each of the assessment areas. Satisfactory student performance at the one-year review must be supported by two-thirds of the graduate faculty for program continuation. Following the annual review, students receive a letter informing them of the results of their assessment. Students receiving less than satisfactory scores in any area will be given the opportunity to develop a remediation plan with their advisor except in situations requiring more immediate action, such as removal from client and/or student contact and/or the program.

If at any point in a student's program, a serious form of unprofessional behavior has occurred, remediation may not be an option. Students can be removed from the program for unethical or unprofessional behavior, regardless of academic standing. If a student is believed to be in violation of ethical or professional behavior that threatens client and/or student welfare, the student will be prohibited from seeing clients and/or working with students. All persons involved with the student's practicum or internship will be immediately informed of the decision.

A detailed 11 step student remediation plan is articulated in the Doctoral Program Handbook.

The performance of each doctoral candidate is reviewed each semester. Maintenance of 3.0 grade point average and compliance with policies of the program, department, the college, and Graduate School are also required.

Core Requirements. The required program of study consists of a minimum of 86 semester hours beyond the master's degree and includes a 12-hour professional core in the College of Education and Human Services (COEHS), a 44-hour Counselor Education program core (minimum counseling classes 17 + research classes 15 + clinical hours 12 = 44 credit hours), 6 hours of electives and a minimum of 24 hours of dissertation credit. Course work taken in other departments or institutions prior to admittance may be accepted as part of the program of study at the discretion of the student's doctoral committee and upon approval of the Dean of the College of Education and Human Services and the Graduate School.

Research, Teaching, and Practicum Experience. Students are required to complete a minimum of six credit hours of advanced practicum in three areas: COUN 594 (1-6) individual, group, and either marital, couple and family or career. Each student develops an internship plan that is consistent with his or her career goals and includes those activities typical of a counselor educator and as outlined by CACREP: counseling activities, professional association work, supervision, teaching, and research. The internship plan does not include dissertation work. Students may request approval of an internship plan after completing all practica and the course on supervision. Program faculty must approve the plan before beginning the internship; however, a request to amend the plan may be submitted in writing to the program chair during internship.

Preliminary Examinations. All Ph.D. candidates must pass a preliminary examination over their doctoral course work before formal admission to candidacy. The doctoral committee with the concurrence of the department is responsible for the

development and evaluation of the preliminary examination.

Doctoral Committees. Students are assigned a doctoral adviser upon admission to the program. Before the end of the first year of doctoral study a doctoral committee is constituted. At this time a new chair may be chosen to head the committee which assists and evaluates students in their program. The committee also is responsible for an oral examination over the completed dissertation and student's general knowledge of the professional field.

Courses (COUN)

Courses in this department may require the purchase of supplemental materials. Field trips are required for certain courses.

412-3 Human Behavior and Mental Health. This course is designed to provide an overview of the factors and conditions in life that tend to affect mental health and the community resources available to address mental health needs. Social, political, economic and professional resources will be examined as they relate to the development, implementation and coordination of mental health services and systems.

430-3 Conflict Resolution Skills for Education Environments. The purpose of the course is to help educators and others to develop the understanding and skills necessary to promote peaceable means for resolving conflict with and among children and adolescents in an educational environment. The course will focus on participants developing personal techniques and approaches to assist children and adolescents to develop age-appropriate conflict resolution skills.

481-1 to 12 Seminar. Conducted by staff members and distinguished guest lecturers on pertinent topics. Special approval needed from the instructor and department.

491-1 to 6 Special Research Problem—Individual Study. For majors. Formulating, investigating, and reporting on a problem in the area of applied psychology. Restricted to advanced standing. Special approval needed from the department.

493-3 Introduction to Helping Skills. This course provides an introduction to the interviewing skills used in the helping professions. Helping skills are studied and practiced through simulated counseling sessions. This course does not meet the program requirements for a Master's degree in Counselor Education. Restricted to Graduate or Senior Standing.

500-3 Essential Interviewing and Counseling Skills for the Professional Helper. This course provides the foundation for counselors and other professionals-in-training for understanding the counseling process in a multicultural society including an orientation to wellness, the development of professional characteristics and behaviors that influence the helping process, and a mastery of the essential interviewing and counseling skills. Restricted to Graduate Standing only.

501-3 Professional, Ethical, and Legal Issues in Clinical Mental Health Counseling. This course provides an overview of the history, foundations, practices and ethical and legal issues relevant to clinical mental health counseling. This course does not include specific skill attainment.

502-3 Professional, Ethical, and Legal Issues in School Counseling. This course provides an overview of the history,

foundations, practices, and ethical and legal issues relevant to school counseling. The course does not include specific skill attainment.

503-3 Professional, Ethical, and Legal Issues in Marriage, Couple, and Family Counseling. This course provides an overview of the history, foundations, practices, and ethical and legal issues relevant to marriage, couple, and family counseling. This course does not include specific skill attainment. Prerequisite: COUN 541.

511-3 Instructional Psychology. Critical review of empirical, methodological and theoretical developments in the experimental study of instructional variables as related to student behavior. Prerequisite: Psychology 407 or equivalent is recommended.

512-3 Life-Span Development. Investigates physical, intellectual and social development throughout the life span. This course provides information regarding learner characteristics and transitions. Focus is on applications for education, counseling and related services. Students will develop competency in application of human development theory and current research to clients and the counseling profession.

521-3 Consultation of Schools and Organizational Systems. Surveys the theories and available research on several approaches to consultation with families, schools and other organizational systems. Systemic approaches to consultation are emphasized.

537-3 Counseling Children: Theory, Techniques, and Practice. The foundations and techniques of individual and group counseling with particular emphasis on theories, operational approaches, tools and related procedures. Prerequisite: COUN 500 or concurrent enrollment.

540-3 Issues and Trends in Counseling. Students will examine current problems, issues, and trends with an emphasis on strategies for solving the problems; clarifying the issues and placing them in proper perspective; examining possible ramifications of the trends.

541-3 Theories of Counseling. This course presents an overview of current theories of counseling with a special focus on the philosophical assumptions, key concepts, techniques and practical applications of each approach. Each of the theories will be examined critically such that the student can begin to formulate an integrated personal theory of counseling. Prerequisite: COUN 500 or concurrent enrollment.

542-3 Career Development Procedures and Practices. For pupil personnel workers, teachers, and administrators to give an orientation to theoretical, economic, and informational aspects of career guidance and to provide experience with using career information in counseling and decision making. Obtaining occupational and information materials for use in guidance and teaching.

543-3 Group Theory and Practice. Focuses on the theory, functions, and techniques of group procedures appropriately applied to decision making, problem solving and resolution of conflict. Major emphasis is given to the dynamics of group behavior, the social-psychological interaction of small groups and their applications to group counseling. Dual emphasis is placed upon interpersonal self-understanding and the familiarity with group procedures. Prerequisite: COUN 500.

544-3 Appraisal in Counseling. Principles and procedures for

gathering appraisal and assessment information about people. Theoretical basis for describing and comparing individuals as well as assessing developmental stages and types will be covered. Particular emphasis will be the validity and reliability of data collection methods, interpretation of this information to individuals and procedures for selection of instruments.

545-3 Cross Cultural Factors Affecting Counseling. Designed to cover special problems of different cultural groups in the counseling process. The influence of culture upon values, beliefs, interests and feelings will be explored as they relate to the rights of the client. Prerequisite: COUN 500 and 541.

546-3 Crisis and Counseling. This course is designed to give the counselor a theoretical and practical background in crisis preparation and intervention in a variety of settings. Students will examine relevant research and theory on crisis and resilience, reflect on their personal crisis experiences and begin to develop fundamental crisis intervention skills. This course is both applicable and practical in presentation.

547-3 Research and Evaluation in Counseling. This course provides knowledge of the field of counseling research and specific methods for conducting and critically reading research as well as applications of needs assessment and program evaluation including using computers for data analysis and legal and ethical considerations in research and evaluation. Restricted to advanced standing in counselor education program.

548A-3 School Counseling Practicum. A combined seminar, laboratory, and field experience representing the central focus of the program in school counseling. Enables the student to practice the role of the counselor under close supervision. Graded *S/U* only. Prerequisite: COUN 500 and 541; admitted to counseling program.

548B-3 Counseling Practicum. Practice of counseling skills with different populations in varied settings. The professional setting depends on the student's interest area. Individual and group supervision are provided. Use of tape recorder is required. Graded *S/U* only. Prerequisite: COUN 500, COUN 541. Restricted to admission to counseling program.

548C-3 Career Group Practicum. Supervision in the creation and maintenance of small group process for the purpose of career development. Application of theoretical models is stressed concurrently with entry level skills in the facilitation of small groups and career counseling. Graded *S/U* only. Prerequisite: COUN 542, COUN 543. Restricted to admission to counseling program.

548E-3 Practicum in Marriage Couple, and Family Counseling. Supervised on-campus counseling experience with couples and families. Supervision will be individual as well as within the context of a therapy team. Graded *S/U* only. Prerequisite: COUN 493, COUN 503, COUN 548A or B, concurrent enrollment in COUN 560. Special approval needed from the instructor.

549-3 Diagnosis and Treatment of Mental Disorders. This course provides counselors and other human service workers with an overview of the current edition of the DSM and is designed to acquaint future counselors or students in other helping professions with an understanding of the etiology, prevention, and treatment of mental and emotional disorders. The course will address differential diagnosis and associated

disorders of the primary diagnoses in the multi-axial system. Prerequisite: COUN 500, 501 or 502 or 503, or consent of instructor.

551-3 The Supervision of Practicum. Doctoral students will: become familiar with models of counseling supervision; practice supervision with Master's students; and be acquainted with the research in the counselor training and supervision. Individual and group supervision are provided. Tape recording of supervision sessions is required.

560-1 to 3 Seminar in Couple and Family Counseling. Seminar will focus on current clinical and research topics in the field of couple and family counseling and the general issues that emerge from the couple and family counseling practicum. Prerequisite: COUN 548A or B, COUN 503, concurrent enrollment in COUN 548E. Special approval needed from the instructor.

562-6 (3,3) Human Development in Education. Theories and research evidence regarding child development and behavior are investigated. These considerations focus upon implications for research and educational practices. (a) Childhood. (b) Adolescent.

568-3 to 12 (3,3,3,3) Topical Seminar in Counseling. A series of advanced seminars in counseling. Sections a through c are to be taken only once. Section d may be repeated as topics vary. Students may take up to 12 credits only for 568. (a) Professional Orientation. (b) Advanced Theory. (c) Conducting Research. (d) Selected Topics. Restricted to admission to Ph.D. program.

575-4 Philosophical and Historical Issues. Course will explore philosophical and historical issues related to studies in human learning, measurement and statistics, counseling and special education. The course will require participants to make major presentations and prepare scholarly papers. Restricted to admission to doctoral program.

576-4 Research Issues in Educational Psychology. Introduction to research methods and current research issues in the areas of human learning and development, statistics and measurement, counselor education and special education. The course will focus on what is currently known about selected major research issues in each of the above areas and what these findings imply for educational practice. Restricted to admission to doctoral program.

590-3 Special Topics in Family Counseling: Sexuality, Violence, and Trauma. This course is designed to prepare counselors-in-training to work effectively with couples and families who may be dealing with issues related to sexuality, violence, and trauma, and to address relevant professional, legal, and ethical issues surrounding clinical work in these areas. Human sexuality includes physiological, psychological, developmental, social, and relational issues as they relate to the conceptualization and treatment of clinical issues in couples counseling. Family violence issues include physical, emotional, and sexual abuse of children, elders, and intimate partners. In addition, the course provides an overview of theories and application of crisis intervention strategies for individuals and family members experiencing a crisis or trauma. Prerequisite: COUN 503.

591-1 to 3 Internship in Counseling. A total of 6 credits (in a minimum two semesters) of supervised internship at an approved site, for 600 clock hours (including 240 hours direct client service in individual, group, and/or family counseling).

Internship provides advanced students opportunity to perform a variety of activities expected of a regular employed professional counselor, under supervision of on-site and faculty supervisors. Graded *S/U*. Prerequisites: COUN 548A or B and COUN 548C.

592-1 to 8 (1 to 6 per semester) Independent Study and Investigation. For advanced graduate students. Topics of interest to the individual student are studied under supervision of a department staff member. Special approval needed from the department.

593-1 to 4 Individual Research. For advanced graduate students in Counselor Education. Formulating, investigating and reporting of research problems in the area of Counselor Education. Special approval needed from the department.

594-1 to 6 Advanced Practicum. Primarily for advanced Master's or doctoral students who want to continue developing their counseling skills. Counseling settings are individually arranged, however, they typically follow the 494 practicum experience. Graded *S/U* only.

595-1 to 8 Internship in the Psychology of Teaching. Full- or half-time teaching practice in the management of classroom behavior, and the design, delivery, and evaluation of instruction. Interns will be supervised by University staff. Graded *S/U* only. Special approval needed from the department.

597-6 Doctoral Internship in Counseling. This experience is designed to prepare students for leadership positions in the education and supervision of counselors. It should be consistent with program's doctoral internship guidelines, as well as specific student goals. Internship occurs at the end of the student's doctoral program and is coordinated by the student's program chair. An internship plan is to be developed by the student with guidance from the program chair, and may include the following counselor education and supervision activities: advanced counseling practice, supervision, teaching, professional service, and research. Prerequisite: COUN 551, COUN 594. Special approval needed from the program.

599-1 to 6 Thesis. Special approval needed from the department.

600-1 to 32 (1 to 16 per semester) Dissertation.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Creative Writing

(See English for program description)

Criminology and Criminal Justice

<http://ccj.siu.edu/>

COLLEGE OF LIBERAL ARTS

Graduate Faculty:

Bubolz, Bryan F., Assistant Professor, Ph.D., University of Nebraska at Omaha, 2014; 2015. Street gangs; juvenile delinquency; extremist movements and domestic terrorism; desistance; violence; criminological theory.

Ferdinand, Theodore N., Professor, *Emeritus*, Ph.D., University of Michigan, 1961; 1985.

Garofalo, James, Professor, *Emeritus*, Ph.D., State University of New York, Albany, 1978; 1992.

Giblin, Matthew J., Associate Professor, Ph.D., Indiana University, 2004; 2005. Policing, organizational theory, criminological theory.

Hibdon, Julie, Assistant Professor, Ph.D., George Mason University, 2011. Crime and place, environmental criminology, policing.

Hillyard, Daniel, Associate Professor, J.D., Ph.D., University of California, Irvine, 1999; 2002. Law and social change, law and social control, law and morality.

Kochel, Tammy, Assistant Professor, Ph.D., George Mason University, 2009; 2009. Policing, legitimacy, crime, prevention, neighborhood ecology and collective efficacy.

Kroner, Daryl G., Associate Professor, Ph.D., Carleton University, 1999; 2008. Offender assessment, Violent and criminal risk, correctional intervention, mentally ill offenders, criminal desistance.

LeBeau, James L., Professor, *Emeritus*, Ph.D., Michigan State University, 1978; 1985.

McDermott, M. Joan, Associate Professor, *Emerita*, Ph.D., State University of New York, Albany, 1979; 1992.

Mullins, Christopher W., Associate Professor, Ph.D., University of Missouri-St. Louis, 2004; 2008. Gender and crime, masculinities, criminological theory, violations, or international criminal law, international criminal courts.

Narag, Raymund, Assistant Professor, Ph.D., Michigan State University, 2013. Youth violence, correctional administration, qualitative research, international and comparative criminology and criminal justice.

Nowacki, Jeffrey, Assistant Professor, Ph.D., University of New Mexico, 2014; 2014. Federal Sentencing, Policing, Gender & Crime.

Pleggenkuhle, Breanne, Assistant Professor, Ph.D., University of Missouri - St. Louis, 2012. Corrections, prisoner reentry, gender, policy.

Schafer, Joseph A., *Chair*, Professor, Ph.D., Michigan State University, 2000; 2000. Policing, future of crime and justice, management and administration, policy and program evaluation, police leadership and organizational change.

The Department of Criminology and Criminal Justice, which enjoys a national and an international reputation for quality research and education, offers the Master of Arts degree and a Doctoral degree in Criminology and Criminal Justice. The mission of the graduate program in Criminology and Criminal Justice is to provide high quality graduate education

in criminology and criminal justice. The program focuses on analyzing criminal justice, social justice, and crime prevention problems and solutions. The program prepares its graduates with the analytic capabilities and problem-solving skills that enable them to succeed in professional careers in criminal justice and related agencies, in policy analysis and research, or in continued graduate or professional education in preparation for an academic career. The focus of the curriculum is theoretically driven, empirically-based criminal justice and crime prevention that takes a problem-solving approach.

Supplementing the academic program, there are opportunities for graduate students to work with faculty members who are conducting research. In addition, students may take Supervised Field Experience credit to blend practical experience with classroom education.

Admission to the Criminology and Criminal Justice Program

Application forms for both the Graduate School and the Department of Criminology and Criminal Justice must be submitted separately. Upon request to the department, an application form from the department will be sent. Acceptance in the program is contingent on the final approval of the Criminology and Criminal Justice graduate committee after admission to the Graduate School.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Criminology and Criminal Justice. Applicants must pay this fee by credit card.

A more detailed description of the graduate program, as well as information about graduate assistantships and fellowships, may be obtained by writing: Graduate Secretary, Department of Criminology and Criminal Justice, Faner Hall – Mail Code 4504, Southern Illinois University Carbondale, 1000 Faner Drive, Carbondale, IL 62901.

Masters Requirements

Admission. Full admission to the graduate program requires a grade point average of at least 2.70 or better ($A = 4.00$) on approximately the last 60 hours of undergraduate coursework and acceptance by the faculty. Scores on the Graduate Record Examination (aptitude portion only) are also required. The Test of Written English will be required as a component of the regular TOEFL exam.

Students who do not have an undergraduate degree in criminology or criminal justice should have a minimum of 12 units in sociology, psychology, political science, or other social sciences. In cases where these criteria are lacking, additional selected undergraduate courses may be required for acceptance in this program.

Required Core Courses. All candidates for the Master of Arts degree in Criminology and Criminal Justice are required to complete four core courses.

- CCJ 500-3 Foundations of Criminal Justice
- CCJ 504-3 Criminological Theory
- CCJ 510A-4 Research Methods in Criminal Justice: Methods and Concepts
- CCJ 510B-4 Research Methods in Criminal Justice: Data

Analysis and Interpretation

Thesis Option. A total of 32 semester hours is required for the thesis track of the Master of Arts degree in Criminology and Criminal Justice. A thesis is required. Students may take a total of 6 thesis semester hours (CCJ 599-1 to 6); however, only 3 hours are counted towards the degree requirements. An oral defense of the student's thesis is required.

Non Thesis Option. A total of 35 credit hours is required for the Non-Thesis Master of Arts degree in Criminology and Criminal Justice. A research paper that exceeds the expectations in terms of rigor and quality of the graduate level term paper is required.

Doctoral Requirements

Admission. Admission to the doctoral program requires a grade point average of at least 3.0 or better ($A = 4.00$) in all prior graduate coursework and the last 60 credit hours of undergraduate study. Applicants must submit scores on the Graduate Record Examination. Students with an MA degree in criminal justice or a related social science at the time of matriculation must still submit GRE scores. The test of written English will be required as a component of the regular TOEFL exam.

Students are expected to have a sufficient background in CCJ, but an MA is not required for admission into the PhD program. Students who do not have an undergraduate or master's degree in CCJ should have a minimum of 12 graduate units in sociology, psychology, political science, or other social sciences.

Advisement. Initial advisement will be given by the department's director of graduate studies. As soon as possible, the director of graduate studies, in consultation with the student, will request an appropriate member of the department's graduate faculty to serve as the student's academic adviser. It is the student's responsibility to develop, in consultation with his/her adviser, a plan of study leading to timely completion of coursework, the comprehensive examinations, and a dissertation. This plan of study will be filed in the student's permanent file. Change of adviser should be filed with the department's Director of Graduate Studies.

Program of Study. Students admitted to the CCJ doctoral program are to have completed a Masters degree. Completion of the CCJ PhD program requires completion of 6 required courses, plus 3 seminars. The Graduate School requires that a minimum of 24 hours be taken in residency at SIUC (courses on campus at SIUC and as a doctoral student) after admission to the program and prior to candidacy. Only 6 credit hours of dissertation may be counted toward the 24 hours in residence. Students may only take up to 6 dissertation hours prior to candidacy (other hours taken prior to candidacy will not count toward the degree). Students must take a total of 24 dissertation hours. Students who receive an MA from SIUC's CCJ department may have already satisfied the core and most of the toolkit seminar requirements; however, they must still meet the 24-hour residency requirement.

Core Courses

Doctoral students must complete three core courses that

include:

CCJ 500 Foundations of Criminal Justice (3)

CCJ 504 Criminological Theory (3)

CCJ 505 Nature or Crime (3)

Required Research Tools

The Ph.D. in Criminology and Criminal Justice is a research degree; students must learn the tools and methods of quantitative and/or qualitative research. Students must have courses selected from the following:

CCJ 510A or POLS 500A or SOC 512 Research Methods - can be waived is already taken (3)

CCJ 510B or SOC 526A Introduction to Statistics - Students with prior graduate statistical courses may test to try to opt out of this requirement (4)

CCJ 510C Advanced Multivariate Statistics or SOC 526B (3)

Guided Electives

The guided electives should be chosen in consultation with the student's advisor and committee to meet the career interests of the student. Students must take a minimum of three graduate seminars based on interests and preparation for the comprehensive examinations. Only 6 credits at the 400 level will be accepted in the combined degree program of M.A. and Ph.D. Students also may take up to 12 directed study credits for individualized instruction from faculty members on content not available in substantive courses (i.e., a specialized technique of analysis). Students are encouraged to consider the wide array of course offerings at SIU.

Comprehensive Examination. Comprehensive exams are required to advance to candidacy. The exams will be offered every fall and spring semester. The committee will grade the exam within 30 days and determine if the student has passed. A final copy of the exam should be deposited with the graduate secretary. In the event of a revision, only one revision is permitted per exam. An oral defense of the revision may be required at the faculty's discretion.

Dissertation (24 hours). Each candidate for the Ph.D. degree must write a dissertation showing high attainment in independent, original scholarship and creative effort. A total of 24 semester hours is required. A maximum of 8 hours of dissertation credit taken prior to passing the comprehensive examination will count. The student must successfully defend orally his or her prospectus, giving the faculty two weeks to review the written prospectus before an oral defense, which shall be open to the public. A student may not hold a dissertation prospectus meeting before successful completion of the comprehensive examination.

A dissertation must be written under the direction and approval of a four member committee of faculty possessing doctorates, one of whom must be from outside the Department of Criminology and Criminal Justice. The student must successfully defend orally his or her final draft of the dissertation, giving the faculty two weeks to review the dissertation before an oral defense, which shall be open to the public. The faculty are not required to meet for a prospectus or dissertation defense during holidays or summer months. The success of a final oral examination devoted primarily to a defense of the dissertation and open to the public will complete the requirements for the

Doctor of Philosophy degree. A final copy of the dissertation must be filed with the Department and Graduate School.

Residency Requirement (24 hours). The residency requirement for the doctorate must be fulfilled after admission to the doctoral program and before formal admission to doctoral candidacy, which occurs with successful completion of the comprehensive examination. The residency requirement is satisfied by completion of 24 semester hours of graduate credit on campus as a doctoral student within a period not to exceed four calendar years.

Courses (CCJ)

The following courses are offered through the Department of Criminology and Criminal Justice.

408-3 Criminal Procedure. An introduction to the procedural aspects of criminal law pertaining to police powers in connection with the laws of arrest, search and seizure, the exclusionary rule, civil liberties, eaves-dropping, confessions, and related decision-making factors. Prerequisite: CCJ 201, 290, and 316 or consent of instructor.

410-3 Policing Communities. A study of the theories underlying modern police reform, how these theories have altered practice, the challenges of implementing and sustaining police reform, and the outcomes of such efforts. Prerequisites: CCJ 201, 290, and 316, or consent of the instructor.

411-3 Risk Assessment and Prediction in Criminal Justice. An examination of the theories, application, and research relevant to the assessment and prediction of negative events and threats in the criminal justice system. The principles guiding the identification, classification, evaluation, and potential interventions of high risk individuals and groups will be covered. The course also reviews the evidence of effectiveness associated with classification and assessment tools. Prerequisites: CCJ 201, 290, and 316, or consent of the instructor.

415-3 Prevention of Crime and Delinquency. Multidisciplinary analysis of the functions, goals and effectiveness of measures to forestall delinquency and crime. Etiology of delinquent behaviors as related to community institutions such as police, courts, corrections, mental health clinics, schools, churches and citizen groups. Prerequisite: CCJ 201, 290 and 316 or consent of instructor.

418-3 Criminal Violence. An examination of historical, comparative, cultural and structural aspects of homicide, robbery, rape and assault. Explores patterns, trends and key correlates. Prerequisites: CCJ 201, 290 and 316, or consent of instructor.

460-3 Women, Crime, and Justice. (Same as Sociology 461 and WGSS 476) A study of women as offenders, as victims, and as workers in the criminal justice system.

461-3 White-Collar Crime. An examination of the physical and financial harm caused by wayward corporations and business employees from both theoretical and empirical perspectives. Emphasis is placed on ethics, theory, legal decision-making and the regulatory monitoring and control of illegal corporate activity.

462-3 Victims of Crime. (Same as SOC 462) An examination of the extent and nature of victimization, theories about the causes of victimization, the effects of crime on victims and services

available to deal with those effects, victims' experiences in the criminal justice system, the victims' rights movement, and alternative ways of defining and responding to victimization.

473-3 Juvenile Delinquency. (Same as SOC 473) An in-depth study of delinquency, analytical skills useful in studying delinquent offenders, systematic assessment of efforts at prevention, and control and rehabilitation in light of theoretical perspectives. Prerequisite: CCJ 201, 290 and 316, or consent of instructor.

480-3 Effective Correctional Practices. (Same as PSYC 480) Exploration and evaluation of correctional intervention strategies developed for sentencing of adjudicated persons. Particular emphasis on examining empirical research literature on effective correctional practices, including programs currently implemented in institutional setting, alternatives to institutional corrections, and community based programs. Prerequisites: CCJ 201, 290, 316, and 384.

492-3 Contemporary Issues in Criminology and Criminal Justice. A forum, geared toward seniors majoring in Criminology and Criminal Justice, that focuses on criminal justice issues of concern to students and faculty. May re-enroll for a maximum of 6 credits. (Maximum 3 semester hours per term) Satisfies CoLA Writing-Across-the-Curriculum requirement. Prerequisite: 201, 290 and 316, or consent of instructor. Past topics include: Crime and Place, Consequences of Mass Incarceration, Myth-busting in Criminology and Criminal Justice, and Race and Crime.

500-3 Foundations of Criminal Justice. An exploration of the nature and scope of the criminal justice process. Criminal justice operations and behavior are assessed in context of the major theoretical, historical, normative and organizational influences found in the field.

504-3 Criminological Theory. Multidisciplinary study of biogenic, psychogenic and sociogenic explanations for criminal behavior relevant to policy-making and practice in criminal justice. Special approval needed from the instructor.

505-3 The Nature of Crime. This course examines the extent, distribution, and correlates of criminal offending and patterns of crime. It emphasizes the review and application of recent empirical research to the development of theories on crime causation, as well as public policy and crime prevention programs.

510A,B-(4,4) Research in Criminology and Criminal Justice.

A two course sequence integrating research methods and data analysis in criminal justice and criminology. **(a)** Methods and Concepts. Principles and methods of scientific inquiry are examined. Special emphasis is applied to research design and data collection issues. **(b)** Data Analysis and Interpretation. Data management, univariate, bivariate and multivariate analyses, and specialized concerns with criminal justice data are emphasized. In this sequence, lab exercises including hands-on experience in the conduct of criminal justice research are featured. Prerequisite: 510A is a prerequisite for CCJ 510B.

510C-3 Advanced Multivariate Statistics. This course provides the foundations of multivariate analyses, including assumptions about data distributions and regression diagnostics. Students will be introduced to various multivariate methods such as time series, structural equation modeling, regression with limited dependent variables, and hierarchical linear modeling. Prior graduate instruction in correlation and linear regression is

essential. Prerequisite: CCJ 510B or equivalent.

517-3 to 6 Advanced Topics in Quantitative Research. This course provides detailed coverage of quantitative analytic procedures used in criminology and criminal justice. Specific topics covered will vary (students should consult instructor). Sample topics: advanced ordinary least squares, time series analysis, structural equation modeling, and analysis of limited dependent variables. Prior knowledge of correlation and regression is essential. Prerequisite: CCJ 510A and B.

518-3 Qualitative Research Methods. An introduction to qualitative research techniques (i.e., interviewing, ethnography, in situ observation, case studies). Provides students with an epistemological foundation for understanding the nature and purpose of these methods. Opportunities for practicing the techniques are provided. Prerequisite: CCJ 510A.

519-1 to 12 Independent Study. Readings or independent research supervised by a faculty member in a selected area of criminal justice or criminology. May be repeated. Only 12 credits may be counted toward any post-baccalaureate studies in CCJ. Special approval needed from a faculty sponsor.

520-1 to 3 Readings in Criminology and Criminal Justice. In-depth advanced readings in areas not covered in other graduate criminology and criminal justice courses. The student must submit a statement describing the topic and relevant reading materials to the faculty member sponsoring the student's readings. May re-enroll for a maximum of nine credits. (Maximum 3 semester hours per term.)

540-3 Seminar in Theory and Practice of Crime Prevention. Recent crime prevention initiatives are examined, with emphasis on the following issues: historical development of the initiatives, their grounding in theories of crime and human behavior, their effectiveness, their unintended consequences, and the values they serve. Special approval needed from the instructor.

550-3 Seminar in Juvenile Justice and Delinquency. An exploration of contemporary problems and policy issues in juvenile justice and juvenile delinquency. Special approval needed from the instructor.

562-3 Law and Social Control. An in-depth examination of the major social science perspectives on law and extra-legal social control. Topics covered may include: theory, social change, law making, informal social control and international law.

571-3 Seminar in Punishment and Corrections. Examines the theory and philosophy of punishment and the practice of corrections in the United States. Attention is given to the implications of competing penal philosophies, their viability and application in the correctional system. Special approval needed from the instructor.

576-3 Policy Analysis in Criminology and Criminal Justice. Examination of the public policy process in criminology and criminal justice, and of the role of policy analysis in the development, planning and implementation of new and revised policies and programs.

584-3 Administration and Management in Criminal Justice. Focuses on the development and history of administrative theory and its impact on management techniques involving administration of justice bureaucracies.

587-3 Seminar in Policing. Multidisciplinary study of the philosophical premises, theoretical implications and functions

of contemporary policing. Special approval needed from the instructor.

592-3 to 6 (3,3) Advanced Seminar in Criminology and Criminal Justice. Seminars of varied content for advanced students. May be repeated with different topics up to a maximum of six credits. Special approval needed from the instructor.

595-1 to 6 Supervised Field Experience. Experience in law enforcement agencies, juvenile courts, probation and parole departments, correctional institutions, delinquency control programs and public or voluntary agencies. Orientation sessions precede placement. Student must submit internship application during the first thirty days of the preceding spring or fall semester. Graded *S/U* only. Only three credit hours may count toward post-baccalaureate in CCJ. Special approval needed from the instructor.

599-1 to 6 Thesis. Graded *S/U* only. Special approval needed from the academic coordinator.

600-1 to 36 (1 to 12 per semester) Doctoral Dissertation. Hours and credit to be arranged by director of graduate studies. Graded *S/U* only. Maximum of 24 hours used toward degree.

601-1 (per semester) Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Curriculum and Instruction

www.ehs.siu.edu/ci
currinst@siu.edu

COLLEGE OF EDUCATION AND HUMAN SERVICES

Graduate Faculty:

Bacon, Heidi, R., Assistant Professor, Ph.D. University of Arizona, 2014; 2014.

Barrette, Pierre P., Associate Professor, *Emeritus*, Ed.D., University of Massachusetts, 1971; 1978.

Bauner, Ruth E., Associate Professor, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1978; 1956.

Becker, Jerry P., Professor, Ph.D., Stanford University, 1967; 1979.

Bedient, Douglas, Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1971; 1969.

Boykin, Arsene O., Associate Professor, *Emeritus*, Ed.D., University of Illinois, 1964; 1972.

Bu, Lingguo, Associate Professor, Ph.D., Florida State University, 2008; 2008.

Byfield, LaVern, Assistant Professor, Ph.D. University of Illinois, 2012; 2012.

Campbell, James A., Associate Professor, *Emeritus*, Ph.D., Ohio State University, 1978; 1989.

Copenhaver, Ron, Associate Professor, *Emeritus*, Ed.D., Indiana University, 1979; 1978.

Coscarelli, William, Professor, *Emeritus*, Ph.D., Indiana University, 1977; 1986.

Dale, Doris C., Professor, *Emerita*, D.L.S., Columbia University, 1968; 1969.

Dixon, Billy G., Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1967; 1961.

Erickson, Lawrence, Professor, *Emeritus*, Ph.D., University of Wisconsin, 1972; 1984.

Fadde, Peter, Professor, Ph.D., Purdue University, 2002; 2003.

Gilbert, Sharon L., Associate Professor, *Emerita*, Ph.D., Ohio State University, 1988; 1988.

Hungerford, Harold R., Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1970; 1965.

Jackson, James, Associate Professor, *Emeritus*, Ph.D., University of Wisconsin, 1976; 1976.

Jackson, Michael, Professor, *Emeritus*, Ed.D., University of Florida, 1971; 1971.

Jones, Dan R., Associate Professor, *Emeritus*, Ed.D., Indiana University, 1978; 1978.

Karmos, Ann, Associate Professor, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1975; 1975.

Killian, Joyce, Professor, *Emerita*, Ph.D., Pennsylvania State University, 1980; 1981.

Lamb, Morris L., Associate Professor, *Emeritus*, Ed.D., University of Oklahoma, 1970; 1970.

Lin, Cheng-Yao, Associate Professor, Ph.D., University of Illinois at Urbana-Champaign, 2003; 2004.

Loh, Christian Sebastian, Associate Professor, Ph.D., University of Georgia, 2004; 2004.

Malone, Willis E., Professor, *Emeritus*, Ph.D., Ohio State University, 1950; 1939.

Matthias, Margaret, Professor, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1972; 1969.

McIntyre, Christina C., Associate Professor and *Department Chair*, Ph.D., Georgia State University, 2007; 2008.

McIntyre, D. John, Professor, *Emeritus*, Ed.D., Syracuse University, 1977; 1977.

Miller, Grant R., Associate Professor, Ph.D., Boston College, 2007; 2007.

Mogharreban, Catherine N., Associate Professor, Ph.D., Southern Illinois University, 1990; 1998.

Moore, Eryn E., Assistant Professor, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1976; 1968.

Nelson, Joann N., Assistant Professor, *Emerita*, Ph.D., University of Illinois, 1980; 1982.

Norris, William, Associate Professor, *Emeritus*, Ed.D., Indiana University, 1973; 1977.

Pearlman, Susan F., Associate Professor, *Emerita*, Ph.D., University of Missouri-Columbia, 1987; 1989.

Post, Donna M., Associate Professor, *Emerita*, Ph.D., Pennsylvania State University, 1990; 1990.

Pultorak, Edward G., Professor, Ph.D., Indiana University, 1988; 1988.

Shelby-Caffey, Crystal V., Assistant Professor, Ph.D., Southern Illinois University Carbondale, 2008; 2009.

Shepherd, Terry R., Associate Professor, *Emeritus*, Ph.D., University of Illinois, 1971; 1971.

Shrock, Sharon A., Professor, *Emerita*, Ph.D., Indiana University, 1978; 1984.

Smith, Lynn C., Associate Professor, *Emerita*, Ph.D., University of Georgia, 1984; 1984.

Solliday, Michael, Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1975; 1967.

Thompson, Stacy D., Associate Professor, Ph.D., Iowa State University, 1998; 2005.

Volk, Gertrude, Professor, *Emerita*, Ph.D., Southern Illinois University, 1983; 1987.

Waggoner, Jan E., Associate Professor, *Emerita*, Ed.D., Memphis State University, 1990; 1990.

Wise, Kevin C., Professor, *Emeritus*, Ed.D., University of Georgia, 1983; 1986.

The Department of Curriculum and Instruction offers three graduate degree programs: the Master of Science in Education (M.S.Ed.), The Master of Arts in Teaching (M.A.T.), and the Doctor of Philosophy in Education (Ph.D.). Those pursuing the M.S.Ed. must select either one of the program areas in Curriculum and Instruction or the concentration in Learning Systems Design and Technology. Candidates for the M.A.T. must select an area of endorsement. Upon graduation from the program, M.A.T. students are eligible for a license to teach only in grades 9-12. Those who already possess a bachelor's degree in education are ineligible for the M.A.T. program. Those pursuing the Ph.D. must select from one of the following program areas: curriculum, instruction, and assessment; human development and family studies; language, literacies, and culture; STEM education; or teacher leadership.

The Department also offers State of Illinois endorsements as middle level educators (grades 6-9), reading teachers, and K-12 reading specialists. Endorsement opportunities are

available to M.S.Ed. and Ph.D. candidates as part of their specialty area preparation; M.A.T. candidates earn the middle level endorsement after completion of requirements for the degree. Endorsements in specific secondary level courses (e.g., chemistry, physics, and psychology) are also available. All such endorsements are arranged through the state and may require additional course work as well as a state-level transcript analysis.

Admission. Applicants for graduate programs must submit admission forms for both the Graduate School and the Department of Curriculum and Instruction. General requirements for admission to graduate programs are described in Chapter 1 of this catalog; additional requirements for the M.A.T. program are explained in the section that follows. In all cases, a selection and review committee screens applicants on the basis of prior undergraduate and graduate work, grade point average, as well as standardized test scores, work experience, and letters of recommendation as needed. The committee may recommend admission for candidates with specific academic deficiencies if, in its opinion, a candidate's application materials demonstrate unusual professional promise.

Application materials may be obtained by addressing a request to: Coordinator of Graduate Studies, Department of Curriculum and Instruction, Mail Code 4610, Southern Illinois University, 625 Wham Drive, Carbondale, IL 62901. Specific information may be obtained by calling 618-536-2441 or by e-mailing currinst@siu.edu. All programs require a nonrefundable \$65.00 application fee that must be submitted with the application for Admission to Graduate Study in Curriculum and Instruction. Applicants must pay this fee by credit card.

Master of Arts in Teaching Degree

SIU's Master of Arts in Teaching (M.A.T.) program is an alternative certification and degree program intended for persons who have successfully completed an undergraduate degree (Bachelor of Arts, Bachelor of Science, or Bachelor of Fine Arts) in the liberal arts or sciences and desire to pursue licensure for teaching at the secondary school level. Those enrolled engage in a year-long internship (two semesters) in a public school setting while also completing university-based studies culminating in the Master's degree. The M.A.T. is designed as a high-quality, technology-rich, accelerated teacher certification program; time-to-degree is approximately fifteen (15) months, including one full academic year and two adjacent or contiguous summer sessions of course work. Those holding undergraduate degrees in teacher education are ineligible for this program.

M.A.T. candidates select an area of concentration most compatible with coursework in the major content area that was completed during a bachelor's degree program. Area of concentration options include:

Agriculture (General)	History
Biological Sciences	Kinesiology
Business	Mathematics
English	Social Science
Family & Consumer Science	Spanish
French	Visual Arts
Health	

Upon graduation from the program, candidates will be certified to teach in a school system in Illinois or in a state offering reciprocity. They will be broadly prepared in their content areas and will possess leadership experience pertinent to the public school setting. M.A.T. candidates advance through the program as members of an interdisciplinary cohort of no more than 25 students and are required to work collaboratively within that cohort to investigate and make recommendations about school-based programs and issues using action research methodologies.

Admission. Admission to the M.A.T. program is highly competitive. Applicants with undergraduate content area backgrounds currently experiencing national teacher shortages will receive priority in admission decisions, but other applicants meeting admission requirements will be considered. In addition to materials required for general admission to the Department and the Graduate School, M.A.T. applicants must submit: (1) a résumé; (2) original letters of reference from two persons familiar with the candidate's undergraduate performance or who can comment specifically about the candidate's ability to succeed in an accelerated graduate-level degree program; (3) passing scores from the Illinois Certification System Test of Academic Proficiency (September through December test dates are recommended). Unless special consideration is accorded an applicant by the MAT Admissions Committee, candidates must also meet the following minimum grade point requirements (based on a 4.0 scale): (1) an overall undergraduate grade point average of 2.75 (based on a 4.0 scale); (2) a grade point average of 2.75 in the final 60 hours of course work; and (3) a GPA of 2.75 in a minimum of 18 hours of course work completed prior to EDUC 500 in the content area for which certification is sought. In the case of graduate students who have completed 12 or more hours of graduate level course work, the graduate GPA is used, and it must meet or exceed 3.000 (based on a 4.000 scale). MAT Admissions Committee members consider undergraduate major, past performance in the content area for which certification is sought, performance in other relevant course work, professional experience, strength of recommendations, test results, and any available anecdotal information in prioritizing candidates for acceptance to the program. In years where the number of qualified candidates exceeds the Department's capacity to handle projected enrollment numbers, candidates may be asked to attend a half-day admission seminar during which an on-site essay and videotaped interview will be obtained for use in making final selection decisions. As space is available in any cohort, non-declared graduate students may be permitted to enroll in MAT courses offered during summer 1; continued enrollment in M.A.T.-related course work as a non-declared graduate student, however, is contingent on meeting or exceeding published admission criteria and obtaining full admission status. Contingent enrollment may be offered by the M.A.T. Admissions Committee in extenuating circumstances, but is not guaranteed and does not constitute a promise of admission to the M.A.T. program.

Retention and Graduation. Students in the M.A.T. program are expected to complete the degree in two intersession/summer terms and one academic year, although variations in this progression are occasionally necessary. To complete

degree requirements within the normal 15-month sequence, candidates enroll in the following blocks of courses to earn a minimum of 41/maximum of 50 graduate credits, dependent on the area of concentration selected.

Intersession 1	CI 543 (5):	Fundamentals of Teaching and Learning
Summer 1	CI 500 (3)	Introduction to research Methods in Education
	SPED 408 (3):	Integrating Children and Youth with Disabilities in Normalized Environments
	EDUC 550 (3)	Experimental Education
Fall	CI 544 (3)	Action Research Methods
	CI 545 (3)	Literacy Instruction for Culturally and Linguistically Diverse Students
	CI 585T (1)	Seminar: Secondary Education
	Content Area Methods (3-6) ¹	
	Content Area Elective (3-4) ²	
	EDUC 500 (3):	M.A.T. Apprenticeship (graduate level teaching practicum)
Spring:	Content Area Elective (3) ¹	
	EDUC 501 (6):	M.A.T. Internship (graduate level student teaching)
Intersession 2:	CI 571 (3):	Secondary School Curriculum
Summer 2	CI 465 (3):	Advanced Teaching Methods
	CI 533 (3):	Instructional Leadership (Teacher Leadership)
	CI 561 (3):	Reading and Learning Content and Technical Text

¹Content area methods courses must be taken at the graduate level; six credit hours of content area electives are required for the degree

²Content area methods courses vary by area of concentration and credit hour assignment. In addition, they may or may not carry graduate credit, but are required for program completion and certification.

To remain in the program, M.A.T. candidates must maintain a minimum overall graduate grade point average of 3.000 and obtain successful summative evaluations at the completion of EDUC 500 and 501.

To graduate, the candidate must: (1) prepare and share publicly a professional exhibit to demonstrate professional

growth throughout degree program; (2) publicly present results and recommendations from an action research collaborative project to a university and/or school faculty review committee; (3) achieve the equivalent of a 3.000 GPA in the teaching apprenticeship and internship; and (4) successfully implement an instructional unit or lesson plan that requires use of digital resources and technologies.

Master of Science in Education Degree

The Master of Science in Education degree in Curriculum and Instruction requires the completion of a minimum of 32 or 36 hours of course work, depending on the research requirement selected. At least 15 of the required semester hours must be at the 500 level and taken at SIU. The student must also meet Curriculum and Instruction core course requirements, research requirements, and program area requirements. No more than six semester hours of credit earned at another institution may be accepted toward this degree. It is recommended that transfer courses be from institutions accredited by national organizations (i.e., CAEP, NCATE, or TEAC). All transfer credits must be approved by the coordinator of the student's program area.

Each candidate's program is planned in consultation with a faculty adviser from the specialty area selected by the student, with consideration for the student's interests, experience, and specialty area. Nondeclared graduate students are advised to consult with the department chair concerning admission to the master's program.

Admission and Retention. Admission to the master's program requires a 2.7 gpa for the last 60 hours of the bachelor's degree as well as the recommendation of the program area faculty. A TOEFL score of at least 550 (220 computerized score) is also required for international students and must be no more than two years old. Students must maintain an overall 3.0 graduate gpa to be retained in the master's program. The progress of each student is reviewed periodically. Students who do not make satisfactory progress, or who violate the regulations of the department, college, or university, may be dropped from the program.

Program Requirements. The Master of Science in Education degree in Curriculum and Instruction requires a nine-semester hour professional core and program area courses (12 to 15 semester hours). The professional core consists of C&I 500, Research Methods in Education; C&I 503, Introduction to the Curriculum; and C&I 504, Systematic Approaches to Instruction. All professional core courses must be completed with a grade of C or better, and an overall grade point average of 3.0 must be obtained for the professional core. The program area program consists of either 23 semester hours of coursework including a thesis or 27 semester hours of coursework. The minimum number of required semester hours is 32 for students completing a thesis or 36 for students completing the coursework only option.

The Master of Science in Education degree in Curriculum and Instruction with a concentration in Learning Systems Design and Technology (LSDT) prepares professionals who use research-based practice to create effective learning and performance support systems utilizing communications

technology in educational institutions at all levels as well as non-school, government and business settings. Competencies developed include those employed in online, distance or e-learning, learning within virtual or simulated environments such as games and simulation, content management systems, and traditional classroom environments. A core of 7 courses (21 semester hours) is required; students consult with their advisors to select additional, elective courses. At least 15 semester hours must be at the 500 level and taken at SIU. All professional core courses must be completed with a grade of C or better, and an overall grade point average of 3.0 must be obtained for the professional core. Opportunities for practicum, internship, and either a research paper or thesis are available. The minimum number of required semester hours is 32 for students completing a thesis or 36 for students completing the coursework only option.

LSD&T Required Courses (21 Credit Hours)

1. CI 406: Foundations of Learning Systems Design & Technology
2. CI 504: Systematic Approaches to Instruction
3. CI 486A: Instructional Development Studio I
4. CI 557: Task Analysis
5. CI 540: Learning Models for Instructional Design
6. CI 553: Consulting in Learning Systems Design & Technology or CI 484 Interactive Multimedia for Learning
7. CI 500: Introduction to Research Methods in Education

LSD&T Elective Courses (15 Credit Hours)

1. CI 401: Designing Digital Games and Simulations
2. CI 400: Social and Informal Learning
3. CI 452: Digital Video Production
4. CI 482: Web Resources for Teachers
5. CI 455: Design and Delivery of e-learning
6. CI 437: Instructional and Human Performance Technology
7. CI 484: Interactive Multimedia for Learning
8. CI 498N: Workshop in Educational Technology
9. CI 551: Assessment and Learning Using Virtual Environments
10. CI 555: Instructional Message Design
11. CI 587: Evaluating Learning and Instructional Programs
12. CI 560: Content and Learning Management Systems for e-learning
13. CI 486B: Instructional Development Studio II
14. CI 585N: Topical Seminar in Educational Technology
15. CI 595N: Internship: Educational Technology

Doctor of Philosophy in Education Degree

The Doctor of Philosophy in Education degree with a concentration in Curriculum and Instruction is designed for teachers and other educational personnel who seek to improve their performance in general and specialized areas in either the public schools or the private sector. This program is designed for students who desire positions requiring advanced preparation at the highest level with emphasis on theories of curriculum and instruction and in-depth preparation in research. For

example, this program is oriented toward students who aspire to positions with institutions of higher education, state departments of education in the United States, ministries of education in foreign countries, educational sections of human service agencies, business and industry, and public schools.

Admission. In addition to the application for admission to the Graduate School, the applicant must also complete the departmental application for admission to the concentration and the related program area. A selection and review committee screens the applicant on the basis of prior graduate work, grade point average, standardized test scores (Graduate Record Examination), research ability, work experience, and letters of recommendation. A TOEFL score of at least 550 is required for international students and must be no more than two years old. The GRE score must be no more than five years old. The selection committee recommends admission of the student only if the program area has a faculty member who is qualified to direct dissertations and who agrees to serve as chair of the student's doctoral committee.

The admissions committee may possibly recommend a student for admission who shows some deviation from departmental standards if, in the committee's opinion, the student shows unusual professional promise.

Retention. Any prospective doctoral candidate with a grade point average of less than 3.25 and 20 semester hours of doctoral work will not be allowed to continue in the program and will not be re-admitted at a later date. Students must accumulate an overall grade point average of 3.50 for all doctoral work to qualify to take the preliminary examination.

Prior to the completion of 30 semester hours of course work, students meet with their major professors to determine whether or not to continue as doctoral students. Such matters as grade point average, progress in the program, course completion, motivation, general academic scholarship, and skills in writing and research are considered. A report is then made to the doctoral committee and the department chair. Students who are not making satisfactory progress or who violate the regulations of the department, college, or university, may be dropped from the program.

Program Requirements. The concentration in Curriculum and Instruction has both College of Education and Human Services and departmental requirements. A minimum of 72 semester hours beyond the master's degree is required. The College of Education and Human Services professional core of at least 6 semester hours consists of EDUC 510, Introduction to Doctoral Studies in Education, and either EDUC 511, Doctoral Seminar in Philosophical and Cultural Foundations of Education, or EDUC 512, Doctoral Seminar in Behavioral and Cognitive Foundations of Education.

The Curriculum and Instruction requirements include a core of nine semester hours; at least 24 semester hours in the selected program area; research tools totaling at least 9 semester hours; and a minimum of 24 semester hours of dissertation. An internship of 2 to 8 semester hours is highly recommended. Courses comprising program area hours other than the core courses are determined by the student and the doctoral committee. No more than six semester hours of

credit earned at another institution may be accepted toward this degree. It is recommended that transfer courses be from institutions accredited by national organizations (i.e., CAEP, NCATE, or TEAC). All transfer credits must be approved by the coordinator of the student's program area. The professional core of courses in the Curriculum and Instruction concentration includes: CI 582, Advanced Research Methods in Education; CI 583, Instructional Theory, Principles, and Practices; and CI 584, Curriculum Theory, Foundations, and Principles. All professional core courses must be completed with a grade of C or better, and an overall grade point average of 3.0 must be obtained for the professional core.

Research Requirements. The Ph.D. in Education is a research-oriented degree. Each doctoral student in education must successfully complete three semester hours of Introduction to Qualitative Research Methods (EAHE 587) and three semester hours of Introduction to Quantitative Research Methods (QUAN 505). In addition, each student must complete a minimum of one other three-credit course on research methods (also referred to as "research tool"). Students with previous coursework in introductory research methods can petition to replace these introductory courses with higher-level research methodology coursework. A list of approved research tool courses for the Ph.D. in Education degree is available in the *Ph.D. Policies and Procedures Manual of the College of Education and Human Services*.

Preliminary Examination. The preparation and direction of the preliminary examination are the responsibility of the program area faculty and the student's doctoral committee. Concepts related to curriculum, instruction, and research/evaluation will be integrated into the preliminary examination. Additional oral and written examinations may be required by the student's doctoral committee.

The examination is offered at least 2 times a year: during the fifth week of the term, as decided by the program area. A student may take the examination no more than 3 times.

Prospectus, Dissertation, and Final Oral Examination. Students may not register for more than 6 dissertation hours until they have been advanced to candidacy. Having been admitted to candidacy, students submit prospectuses to their doctoral committees for approval. The dissertation must show high attainment in an independent, original, scholarly, and creative effort. A student's dissertation will be circulated to members of the doctoral committee at least two weeks in advance of the proposed defense.

The Department of Curriculum and Instruction requires an oral examination conducted by the doctoral committee. Oral examinations are open to all interested observers. Notice of the time and place of the examination and the abstract of the dissertation are circulated throughout the department and the College.

Certificate in Gerontology

The Department of Curriculum and Instruction participates in the Certificate in Gerontology interdisciplinary program. For more information on the Certificate program, please see Certificate Programs in Chapter One of the Catalog.

Courses (CI)

400-3 Social and Informal Learning. Covers games, simulations, role-playing, discussion forums, and social networking as informal modes of learning in both education and training contexts. Both face-to-face and online aspects of social and informal learning are considered.

401-6 (3,3) Designing Digital Games and Simulations. This course focuses on the design and development of simulated environments (such as digital games and virtual worlds) and how they may be used for the delivery of online learning and instruction. The production process will focus on the use of suitable technologies and game development toolkits to create immediately usable prototypes for learning showcases.

402-3 The Study of Cultural Diversity in Education and Family Services. The student examines origins, characteristics of behavior, learning patterns, family constellations and lifestyles of the diverse cultural groups in our community, state and nation. Students will identify their own cultural background and biases; recognize diversity resulting from ethnic origin, gender, age or disability; and experience ways of learning about cultures other than their own that promote constructive communication and integration into all aspects of schooling, teaching and family services.

403-3 Child Abuse and Neglect. Examines the many facets of child abuse and neglect. Emphasis is on current research in the field, as well as the roles and responsibilities of various professionals who work with children and their families.

404-3 Infant Development. Current theories and knowledge concerning growth and development of infants, with related laboratory field experiences. Prerequisite: CI 237 or PSYC 301 or equivalent.

405A-3 Infant and Toddler Development. This course is designed to be an overview of theoretical and research-based understandings of infant development. Principles of development as well as dynamics of human behavior and relations will be explored. A topical approach is taken to allow the understanding of how broad concepts of development apply to infant development. Application of developmental knowledge involves working with infants and toddlers. Students are required to have concurrent enrollment in CI 405B. Prerequisite: C or better in CI 317, CI 318A/B, CI 337, and at least one of the following: CI 237, EDUC 314.

405B-1 Infant and Toddler Practicum. This practicum will prepare students to conceptualize and implement optimal learning environments for infants and toddlers. Participation is one half day per week (fall and spring) or two half days per week (summer). Students are required to have concurrent enrollment in CI 405A. Prerequisite: C or better in CI 317, CI 318A/B, CI 337, and at least one of the following: CI 237, EDUC 314.

406-3 Foundations of Learning Systems Design & Technology. This course provides students with an overview of the issues related to learning systems design and technology (formerly, instructional design and technology). It covers historical foundations, trends, current practice, and future directions of the field and provides students with the context of the courses in the concentration.

407-3 to 9 (3 per topic) Diagnostic Teaching Strategies for Classroom Teachers. Diagnostic instruments and teaching techniques with an emphasis on understanding and teaching

students under-achieving in the areas of **(c)** Language Arts, **(e)** Mathematics, and **(f)** Reading. Prerequisite: CI 423, **(c)**CI 322, **(e)**CI 422, **(f)** or consent of instructor.

408-3 Current Issues in Early Intervention. This course will examine developmental ecology of early intervention and the dynamic processes by which children and their environments interact. A comprehensive overview of the knowledge base and critical assessment and implementation strategies of early childhood intervention along with intervention models and appropriate practice will be covered. Prerequisites: CI 237, SPED 405 or consent of instructor.

409-3 Creative Teaching. To assist pre- and in-service teachers in acquiring methods and materials that will improve instruction in the public school classroom, with special attention to the characteristics and needs of students.

410-2 Creative Writing in the Public School. Techniques of encouraging creative writings in the schools.

412-3 to 15 (3 per topic) Improvement of Instruction in Early Childhood Education (Preschool-Grade 3). Examines recent findings, current practices and materials used in early childhood education in the fields of **(c)** Language arts, **(d)** Science, **(e)** Mathematics, **(f)** Reading and **(g)** Social sciences. Prerequisite: specialized methods course for the field of study selected by the student.

413-3 Language Development of the Young Child, 0-8 Years. The normal language development and communication skills of the young child will be the focus of this course; attention will be given to an integrated, holistic philosophy toward development and learning in young children ages 0-8. Specifically focusing upon social and environmental influences on the development of language and literacy, students will observe, listen, record, and analyze samples of young children's communication. Prerequisite: CI 237 or PSYC 301 or graduate standing.

415-3 Teaching Middle School Mathematics (Grades 4-8). Examines current approaches to middle school mathematics and the use of meaningful instructional materials, quantitative literacy, and technologies for problem solving. Students will share experiences and design activities for classroom use. Prerequisite: CI 322 and an overall GPA of at least 2.75, or consent of instructor.

417-3 Administration of Early Childhood and Family Programs. This course introduces students to the planning, organizing, and daily management of programs serving young children and their families. Topics will include funding/budgeting, staffing, programming, and evaluation. Prerequisite: CI 318.

418-3 Critical Issues in the Profession of Teaching. This course explores the philosophical, social, and psychological foundations of teaching. Students will critically examine the forces that have influenced education at various historical periods. Students will become familiar with the perspective of critical pedagogy in understanding educational decision-making. Students will explore will explore educational contexts that promote optimal learning and development for all students while considering the complexity and multiplicity of cultural variables and identifies (e.g. ethnic, linguistic, racial, gender, physical abilities, socioeconomic, etc.). Students will explore, critically analyze, and express a personal philosophy of education. Prerequisite: EDUC 319.

419-3 Child, Family and Community Engagement. The course

is designed to provide students with the knowledge and skills needed to work successfully with families and caregivers in individual and community settings. The focus will be on strengthening relationships within and between home, school and community settings. Family engagement in early childhood programs and elementary schools will be stressed. Co-requisite: EDUC 319.

420-3 Adult Literacy Strategies. The focus is on understanding the problems of the individual whose literacy level does not permit full participation in economic, social, family and civic opportunities. Emphasis is placed on developing strategies to support and strengthen adult literacy skills.

421-3 Building Family Literacy Programs. This course will provide an in-depth look at family literacy. Emphasis will be placed on the history and foundations of family literacy, research, program models, quality programming, program evaluation and funding. The course is designed for both the experienced and the developing family literacy professional. Prerequisite: CI 419.

422-3 Teaching Reading in the Elementary School. (Same as EDUC 422) Examination of the reading process with emphasis on the factors and conditions that affect reading. Emphasis also on the formulation of a philosophy of reading and its implications in relation to methods, materials, organizational procedures, and evaluation techniques. Prerequisite: for Elementary Education majors: grade of C or better in CI 321, CI 435 and Education CI 313 or consent of instructor; for Special Education majors; admission to the Teacher Education Program. Note: Elementary Education majors must take CI 423 and EDUC 322 concurrently with this class.

423-3 Teaching Elementary School English Language Arts. This course covers the oral and written communication processes with emphasis on the English languages arts in the elementary school. Focus on the fundamentals of academic and social language of all users of English. Effective planning, delivery, and assessment of literacy lessons align with the Illinois Common Core learning standards for writing, speaking, and listening, and reading and that accommodate all learners in the elementary classroom, including English Language Learners (ELL) and students with Individualized Education Programs (IEP). Prerequisite: Communication Studies 101 or equivalent, C or better in CI 321 and CI 435, or consent of instructor. Note: Elementary Education majors must take CI 422 concurrently with this class.

426-3 Introduction to Teaching Elementary School Science (PreK-4th Grade). Content and methods of elementary school sciences, grades P-4. Emphasis on the materials and strategies for effective science education. One or more field trips. Restricted to students already admitted to the Teacher Education Program. Prerequisite: Grade of C or better in SCI 210A, and SCI 210B.

427-3 Science Process and Concepts for Teachers (4th - 8th Grade). Specifically designed to develop those cognitive processes and concepts needed by elementary and middle level teachers in the teaching of modern science programs. Prerequisite: grade of C or better in CI 426, SCI 210A, and SCI 210B.

428-3 Inquiry Skills for Teaching Junior and Senior High School Science. The major focus will be the application of

inquiry skills as used in all areas of science instruction at the junior and senior high school levels; students will be expected to demonstrate mastery of basic and integrated science process skills through conducting and reporting results of science investigations.

429-3 Instructional Methods for the Primary Child: Social Sciences and Science. Emphasis on creating optimum learning environments, planning for instruction, models of teaching, integrated learning and appropriate instructional methods in science and social sciences, grades 1-3. Concurrent enrollment in CI 430 required. Prerequisites: CI 318 A,B, CI 324, or consent of the instructor.

430-3 Instructional Strategies for the Primary Child: Mathematics. Emphasis on creating optimum learning environments, integrated learning and appropriate instructional methods in the content area of mathematics, grades 1-3. Concurrent enrollment in CI 429 required. Prerequisite: CI 318A,B, CI 324 with grades of C or better, or consent of the instructor.

431-3 Literacy Foundations and Instructional Models. This course provides teacher candidates with the theoretical knowledge necessary to critically examine various models of literacy instruction. It introduces the reading process, including the relationship between reading, writing, listening, and speaking; the importance of differentiating instruction for all learners; and how to select appropriate literature for use in early childhood, elementary, and middle level classrooms. Restricted to students already admitted to the Teacher Education Program. Co-requisite: EDUC 301 and EDUC 313.

432-3 Literacy Development and Assessment (PreK-4th Grade). This course explores the variable that affect development at the P-4 level. Teacher candidates will learn to employ all four strands of the English language arts (reading, writing, speaking, listening) to teach literacy concepts and strategies across the curriculum to accommodate all learners in culturally responsive classrooms. Emphasis will be placed on an understanding of the reading and writing process; the content of literacy instruction; and scientifically based literacy research, methods, and materials used in balanced reading instruction and assessment. Prerequisite: CI 431. Co-requisite: EDUC 302 and EDUC 319.

433-3 Instruction and Assessment of Adolescent Literacy. This course explores the variables that affect development at the middle level (4th-8th grade). Emphasis will be placed on an understanding of the reading and writing process; the content of literacy instruction; and scientifically based literacy research, methods, and materials used in balanced literacy instruction and assessment. There is a focus on language and literacy demands within the content areas, needs of culturally and linguistically diverse adolescent learners, and the identification of adolescents who have literacy challenges. Prerequisites: CI 432. Co-requisite: EDUC 303 and EDUC 308.

434-3 Diagnostic Literacy Assessment and Intervention. This course surveys the principles and practices of literacy assessment. Teacher candidates examine diagnostic approaches and instructional strategies that teachers employ when working with individuals who struggle with learning to read and write. There is an emphasis on the causes of reading and writing difficulties and the contribution of factors such as

cultural differences, linguistic variation, student motivation, various disabilities, and instructional approaches. It focuses on diagnostic techniques and the use of dynamic assessment to inform the design, monitoring, and evaluation of literacy instruction. Prerequisites: CI 432. Co-requisites: EDUC 303 and EDUC 308.

435-3 Literature and Informational Texts for Children and Early Adolescents. Students will engage with studies of various types of literature and informational texts as well as text exemplars from the common core initiative; analysis of literary qualities; selection of literature for various developmental needs of children in preschool, elementary school, and middle level settings; and research-based presentations of books and other media for use in various school settings. Prerequisite: Admission to the Teacher Education Program, C or better in English 101 and 102, and overall GPA of 2.75; or consent of instructor. Lab fee \$10.

437-3 Instructional and Human Performance Technology. For those persons interested in the role that learning systems and instructional design and technology play in the field of human performance technology. Emphasis is upon performance problem identification, the distinction between skill/knowledge deficits and other performance problems, and the rationale for instructional solutions as well as electronic performance support systems, feedback and incentives, certification and other HP technologies.

441-3 Multicultural Literature for Children. Identification, selection and evaluation of books and audiovisual materials dealing with various cultural groups such as African Americans, Asian Americans, Native Americans, Hispanic Americans and European Americans.

445-3 Literature and Informational Texts for Young Adults. This course introduces quality literature and informational texts for young adults (grades 6 -12). Students will engage with genres and authors of young adult literature, text exemplars from the common core initiative, cross-curricular rationales and differentiated instructional methodologies for integrating young adult literature with content and other text.

452-3 Digital Video Production. Video has become an essential aspect of teaching, training, and communications. This course is an intensive workshop that provides a thorough understanding of video formats, video production, and video editing techniques. No previous experience with video production is required. Lab fee: \$20.

455-3 Design and Delivery of e-Learning. Investigates e-learning in both higher education and corporate training contexts. The course draws upon the tradition of distance education in covering the design, delivery, and evaluation of online and blended learning in higher education. The course also draws upon the tradition of computer-based training (CBT) in covering the design, delivery, and evaluation of web-delivered training in corporations and organizations. Lab fee: \$20.

460-3 Teaching Reading and Writing in the Middle Grades. Familiarizes middle grades teachers with issues relevant to instruction in literacy skills essential to learning in any subject area. Students will demonstrate personal competency relevant to these skill and understanding of strategies for identifying problems and developing literacy competencies in young adolescents. Prerequisite: CI 432 and CI 433 (for elementary

majors), 360 (for secondary majors) with grades of C or better, or consent of instructor.

462-3 Middle and Junior High School Programs. Focuses on the development of middle and junior high school curriculum and the identification of instructional activities for early adolescents. Emphasis is placed on development of literacy strategies, developmentally appropriate teaching strategies, interdisciplinary unit planning, teaming, and technologies and materials appropriate for teaching early adolescents, ages 10-14. Prerequisite: EDUC 313 or consent of instructor.

463-3 Meeting in Social and Emotional Needs of Gifted Children. Deals with strategies for meeting the social and emotional needs of gifted children in the classroom. In particular, this course focuses on low-incidence gifted students, including underachievers, minorities and females. The course will not only cover particular curriculum and instruction strategies designed for this population but also will emphasize strategies for teachers to be more facilitative in assisting these students to accept and realize their potential. Prerequisite: CI 467 or consent of instructor.

465-3 Advanced Teaching Methods. The focus is on a variety of teaching methods and strategies, which are appropriate for secondary and/or post-secondary educators. Both individual and group methods are emphasized.

466-3 Documenting Accomplished Teaching. This course will help teachers understand and gain requisite skills for participation in the National Board for Professional Teaching Standards (NBPTS) certification process. As part of learning to understand and document NBPTS standards, teachers will describe, analyze and reflect on drafts of written commentaries, videotapes of small and large group lessons, and student work.

467-3 Methods and Materials in the Education of the Gifted. Content focused on the most appropriate instructional strategies and materials to be utilized with the gifted. Time spent practicing teaching models, designing materials and developing teaching units. Emphasis placed on techniques for individualizing instruction for the gifted and talented students.

468-3 Science Methods for Middle and Senior High Schools. A performance-based approach to instructional skills common to teaching natural science at the middle and senior high school levels. Three class hours and one micro teaching laboratory hour per week.

469-3 Teaching Social Sciences in the Secondary School (6 - 12). Emphasis is placed on the analysis and evaluation of the social sciences with focus on instructional strategies and curricular designs in the teaching of history, geography, political science, economics, and sociology, as well as content reading for the social sciences. Prerequisite: EDUC 313 or consent of instructor.

473-3 Teaching in Middle Level Schools. Acquaints students with issues of teaching young adolescents and the role of teachers in connecting schools with community resources. Information from current area specialists and exemplary practitioners extend appropriate teaching strategies and supplement background knowledge on special topics related to social, emotional and physical development related to the curriculum. Lab fee: \$10. Prerequisite: CI 462, EDUC 313 or consent of instructor.

482-3 Web Resources for Teachers. Investigates use of

the Internet in classroom instruction and for professional development. Focus is on the “4 Cs” of Internet use by teachers: Communication, Content, Collaboration, and Community. Lab fee: \$20.

483-6 (3,3) Instructional Applications for Microcomputers. A study of the development and use of microcomputers systems in educational settings. Emphasis is upon the characteristics, capabilities, applications and implications of microcomputers and microcomputer lessons, with case studies of their integration into the teaching, learning process.

484-3 Interactive Multimedia for Learning. An introduction to the evaluation, design, and development of interactive instructional multimedia programs. The instructional methods of Tutorial, Drill, Simulation, and Educational Games are covered. Projects include designing, developing, and use-testing an interactive instructional multimedia program. Lab fee: \$20.

486A-3 Instructional Development Studio I. The “Learning Studio” environment provides students with the opportunity to learn and use authoring systems, languages and product development tools to design, develop and produce online resources for learning and instruction. Participants will showcase learning artifacts created using a variety of commercial productivity tools and creativity suites. Prerequisite: basic web design skills. Special approval needed from the instructor. Lab fee: \$20.

486B-3 Instructional Development Studio II. The “Learning Studio” environment provides students with the opportunity to learn and use authoring systems, languages and product development tools to design, develop and produce online resources for learning and instruction. Participants will showcase learning artifacts created using a variety of commercial productivity tools and creativity suites. Prerequisite: basic web design skills. Special approval needed from the instructor. Lab fee: \$20.

487-3 Web-based Applications for Teachers and Instructors. Survey of trends and developments and laboratory instruction in the use of Web-based applications representative of those used by teachers, education specialists, or instruction in educational settings. An emphasis is placed upon developing skills used by teachers, education specialists, or instructors which enhance and facilitate the education processes within a Web-based learning environment. Laboratory fee: \$20.

493-3 Writing for Research and Publication. This course covers the current American Psychological Association (APA) guidelines (required by the Curriculum and Instruction department for all writing, including thesis and dissertations) for reporting and writing reports, annotated bibliographies, and reviews of literature. Participants will read, critique, write, and present four short (5 - 10 pages each) scholarly research results and/or scholarly reviews of literature. This course will emphasize professional vocabulary, format, and writing style. Participants will write final, detailed and thorough literature reviews using APA format and style in their fields of study. This course has been recommended by the CI Graduate Faculty and all CI graduate students, especially those who are early in their programs. Instructor approval required for undergraduates.

495-6 Internship in Child and Family Services. Supervised work experiences in settings for children and families and/or public agencies. Prerequisite: CI 227, CI 317, CI 318A, CI 318B, CI 327,

CI 337, CI 395, CI 404, CI 405A, and CI 405B. Special approval needed from the instructor.

496-2 to 6 (2 to 4 per semester) Field Study Abroad. Orientation and study before travel, readings, reports and planned travel. Includes visits to cultural and educational institutions. Maximum credit hours in any term are 4.

498-1 to 15 (1 to 3 per topic) Workshops in Education. Critical evaluation of innovative programs and practices. Acquaints teachers within a single school system or in a closely associated cluster of school systems with the philosophical and psychological considerations and methods of implementation of new programs and practices in each of the following areas: **(a)** Curriculum, **(b)** Supervision for instructional improvement, **(c)** Language arts, **(d)** Science, **(e)** Mathematics, **(f)** Reading, **(g)** Social sciences, **(h)** Early childhood education, **(i)** Elementary education, **(j)** The middle school, **(k)** Secondary education, **(m)** Instruction, **(n)** Educational technology, **(o)** Environmental education, **(p)** Children's literature, **(q)** Family studies, **(s)** Gifted and talented education, and **(t)** Teacher education. Maximum of six hours toward a Master's degree. Special approval needed from the instructor.

500-3 Introduction to Research Methods in Education. The student will evaluate and synthesize research, demonstrate a basic understanding of research concepts and principles, and compare and contrast specific methods for conducting research.

501-3 Improving School Reading Programs. For teachers, reading specialists, instructional leaders. Current issues, trends, practices in improving school reading programs at all levels. Special emphasis on school based management, teachers as change agents, curriculum evaluation, staff development and roles of school personnel. Participants assess existing programs and develop improvement plans. Prerequisite: CI 512, CI 513 or CI 561.

503-3 Introduction to the Curriculum. Deals with the nature, purposes and functions of curriculum planning and development; curriculum design and organization; curriculum implementation and maintenance; and curriculum evaluation as each component relates to the total curriculum.

504-3 Systematic Approaches to Instruction. Gives graduate students an opportunity to investigate, discuss and apply systematic approaches to instruction. Special emphasis is given to that element of the instructional system that allows for the integration of instructional media into the process.

506-3 Professional Services for Diverse Family Structures. Case analysis of different family structures through seminar teams. Each team will be responsible for analysis of the interaction of the family structure and the economic, nutritional, and socializing activities carried out within the family-household. Role and sources of assistance through current programs will be included. Special approval needed from the instructor.

507-3 The Impact of Public Policy on Family Life. This course focuses on an analysis of policies that impact the lives of children and families and includes an overview of the legislative process at the local, state, and national levels. The course emphasizes practical ways in which we can become proactive and effective advocates for children and their families.

508-3 Systematic Observation and Analysis of Instruction. Students will learn to use conferencing techniques and to construct and use valid and reliable systematic observation

instruments to provide the basis for analysis and feedback about classroom instruction.

509-3 Foundations of Environmental Education. Designed specifically to provide teachers, administrators and curriculum specialists with the knowledge and skills necessary to implement environmental education strategies in both elementary and middle schools. Includes work in ecological foundations, programs currently in use, unit designs, methods and research. One or two field trips may be required.

512-3 Reading in the Elementary School. First course in the reading sequence. Survey of the reading process. Introduction to factors affecting the reading process, the common core of skills, teaching strategies, materials and research.

513-3 Emergent Literacy. A study of early literacy. Explores the foundations of family literacy as the basis for continued development of reading and writing in kindergarten and the primary grades.

514-3 Advanced Child Development. Major theories of child development as a framework for understanding of the contexts of development for young children will be examined. Emphasis will be on current research and issues in child development and implications for practice.

515-3 Advanced Remediation in Mathematics. Strategies for the design of prescribed systematic instruction for correcting identified mathematics difficulties. Experience in designing and preparing materials for corrective purposes. Prerequisite: CI 407E or consent of instructor.

516-3 Teaching Mathematics in the Elementary School. Master's degree level course, which acquaints the student with approaches to teaching, development of curriculum materials and authoritative positions on the mathematics of grades K-8. Emphasis on teaching aids, problem solving and recent developments at this level.

517-3 Early Childhood Programs: Organization and Administration. Presents an overview of the organization and administration of programs for children ages three to eight with experiences in planning for operating and administering such programs. Prerequisite: CI 518 or consent of instructor.

518-3 Critical Issues in Early Childhood. A survey of current problems and practices in early childhood education for children from three to eight years of age, with emphasis on reading in current research literature. Special approval needed from the instructor.

520-3 Action Research in Early Childhood. (Same as CI 544) Major trends and current issues in research as they relate to child development and early childhood programs will be explored. Special emphasis will be placed on the relationship of research to professional preparation and practice. Restricted to early childhood students who have taken all core courses for completion of the master's degree. Letter grade/DEF.

521-4 Advanced Diagnostic Teaching of Reading. Emphasizes diagnostic teaching strategies that teachers and reading specialists employ when dealing with under achievement in reading. Students use informal and formal tests, observation and trial lessons to select instructional materials and activities appropriate to different reading/writing problems. Each student tutors persons while being supervised in the Clinical Center. Prerequisite: CI 512 or CI 513 or CI 561, CI 407F. Special approval needed from the instructor.

522-3 Integration of Technology in Mathematics and Science Teaching. Integrating technology in Math and Science teaching. Technology may include calculators, computer software, computer-based laboratories, data collection devices, interactive manipulatives, and other internet resources. Special approval needed from the instructor.

523-3 Language Arts in the Elementary School. The practical bearing of investigation and theory on the improvement of current practices in the teaching of the language arts other than reading. Attention given to evaluation of teaching materials in these areas. Prerequisite: CI 423 or consent of instructor.

524-3 Methods for Teaching Social Sciences in the Elementary School [Pre-K-6]. A study of theory and practices of teaching and developing programs in elementary school social sciences. Particular attention to be given to trends and issues in social sciences. Various social science models will be examined and evaluated for practical use. Students must demonstrate competencies and skills related to content reading for the social sciences.

525-3 Integration of Technology into Mathematics Education [PreK-8]. Technology use in mathematics teaching and learning, such as handheld calculators/computers; hands-on experience in teaching with easily learned tools for teaching/learning mental computation, computation, algebra, geometry, probability, statistics and use of software - e.g., Shapemakers, Geometer's Sketchpad, Excel, graphing calculators, computer-based laboratories, data collection devices, interactive websites and other internet resources.

526-3 Problems in Elementary School Science Education. Emphasis upon identifying problems and trends within elementary school science education and planning for research in this field. Prerequisite: CI 426.

527-3 Advanced Family Studies. Examination of the major theoretical approaches and current research in family development. Review the nature and value of theory to the study of the family and evaluate the use of theory in empirical research. Implications for policy.

528-3 Methods for Teaching Mathematics in the Preschool and Early Childhood Grades (Pre K-3). Acquaints the student with the learning characteristics of children and teaching methods at grades pre K-3. Emphasis on concrete manipulative teaching aids, learning readiness and diagnosis of learning difficulties.

529-3 Modern Approaches to Teaching Secondary School Mathematics. (Same as MATH 511) Topics will include problem solving, applications of mathematics and teaching proofs in secondary school mathematics. Practical classroom use of materials will also be emphasized. Special approval needed from the instructor.

530-3 Teaching Problem Solving in School Mathematics (Grades K-8). Designed to acquaint teachers with problem-solving processes and how to integrate problem solving into their teaching. Emphasis is placed on teaching the process of problem solving. Restricted to graduate standing or consent of adviser.

531-3 Curriculum for Elementary & Middle Level Schools. Designed to assist teachers and administrators in making curricular decisions for elementary and middle level schools based on knowledge of educational foundations, standards, learning experiences, research, materials and methods,

instructional programming and evaluation.

533-3 Instructional Leadership. A study of research and related literature concerning the roles and responsibilities of various instructional leaders in public and private schools, professional development centers, state departments of education and college or university settings. Leadership styles and behaviors, especially as they apply to the academic circumstances and environments in specific case studies, are examined.

534-3 Organization of the Elementary School. An analysis of types of elementary school organizations with special attention to influence of school organization upon the educational program. Application of research findings to selection and use of materials of instruction. Special consideration to classroom teachers' professional problems.

535-3 Reading and Language Arts Research Seminar. Students survey current research in Reading and Language studies and present a research paper to the seminar participants. Prerequisite: CI 500, nine hours coursework in reading and language arts. Special approval needed from the instructor.

536-3 Partnerships and Mentoring the New Professional. A study of the theories, practices and research of Professional Development Schools and other collaborative teacher education and school reform initiatives with special attention given to the issues of collaboration and cooperation, team building and consensus building, honoring diversity and change, and educators as problem solvers.

537-3 Current Issues in Mathematics Education. This course provides graduate students with opportunities to study, discuss, and critically analyze issues and research in mathematics education. Students will become familiar with the major problems and issues facing mathematics educators at all school levels. Examination of recent mathematics education literature will be included as students gain an overall perspective on the discipline of mathematics education.

538-3 Research in Mathematics Education. This course provides graduate students with opportunities to study, discuss, and make critical analyses of recent mathematics education literature and issues in the USA and other countries. Students will gain a better perspective on NCTM Standards and their relationship to research as they develop a detailed lesson plan in mathematics and conduct both a literature review and a data analysis report in mathematics education. Prerequisite: CI 537.

539-3 Leadership in Mathematics and Science. An exploration of current literature in math and science leadership and the application of principles and skills necessary for mentoring instructional development in math and science. Special approval needed from the instructor.

540-3 Learning Models for Instructional Design. Surveys models of learning as they apply to the fields of Instructional Design and Instructional Technology. Models ranging from behaviorism to constructivism are covered along with theories concerning cognitive development and motivation. Theories are applied to analyzing instructional situations.

543-5 Fundamentals of Teaching and Learning. First course in the Master of Arts in Teaching (M.A.T.) program sequence. Its focus is on development of a specific set of planning skills secondary level teachers need to appropriately design, implement, manage, and assess student learning. The course is offered annually during spring intersession only. Special

approval needed from the instructor.

544-3 Action Research Methods. (Same as CI 520) The focus of the course is on learning about action research, learning to develop and use various data collection tools, developing an action research question, learning about and using various data analysis tools, developing a report, and presenting a research report to an audience of colleagues and peers. Prerequisite: CI 543 (required for MAT students) or consent of instructor. Letter grade/DEF.

545-3 Literacy Instruction for Culturally and Linguistically Diverse Students. This course introduces students to issues related to first- and second-language development, language variation, cultural diversity, second-language instruction, English as a Second Language (ESL) and bilingual education, and culturally and linguistically responsive instruction. These topics will be explored in terms of student learning and teaching and prepare students to teach English language learners (ELLs), dialect speakers, and students from diverse cultural and linguistic backgrounds. The course will serve as an examination of contemporary language acquisition theory; overview of ELL reading research; exploration of methods for motivating and sheltering instruction for ELLs; and investigation of the impact of federal policies on the types of experiences ELLs are afforded. The course is required for students working toward the reading specialist endorsement.

546-3 Family and Community Literacies and Involvement. This course provides students with the knowledge and skills needed to work successfully with families and parent groups in individual, group, school and community settings. A socio-cultural perspective is evident as the focus will be on acknowledging and valuing the multiple literacies within families and communities, and strengthening adult-child relationships and parent-staff relationships in home, school, and community settings. An awareness of strategies in developing positive and supportive relationships with families of children, including the social, cultural, educational, health, economic, and political dimensions of community and family life, philosophical basis for family participation, family-centered services, and strategies for working with socially, culturally, and linguistically diverse families will be included. Prerequisite: CI 545.

548-3 Science Education Research Investigations. This course involves the study of special problems and related research associated with practical educational situations in science education or related fields. The main objective is to provide doctoral students with opportunities to develop research skills in science education by conducting research projects on science education topics. Designed to help students learn the basics of research but not a research methods course.

549-3 New Literacies & Emerging Technologies in a Participatory Culture. This course explores the changing landscape of reading and writing as emerging technologies place new demands, challenges, and opportunities before readers and writers. Drawing from a socio-cultural perspective, this course aims to deepen students' understandings of the reading and writing processes with written, hyper, and multi-modal texts as well as strategies for supporting students' development in these processes. Particular emphasis will be on acknowledging and valuing the multiple literacies evident within families,

communities, and contemporary society, and strengthening understanding of how best to support learners as they enact new literacy practices that rely upon emerging technologies. Techniques for incorporating new technologies into teaching, as well as the legal and ethical challenges for both teachers and students, will be examined. Prerequisite: CI 512, 513, or 561.

551-3 Assessment and Learning Using Virtual Environments. This course covers the foundations and trends in the research literature regarding the use of game, simulated and virtual environments for online learning and assessments. Issues and implications of these environments for instructional delivery, decision-making analysis of users and performance assessment methodologies are included.

552-3 Seminar in Language, Literacies, and Culture. This course focuses on influential readings considered foundational to the study of language, literacies and culture. Students will identify a list of influential readings and participate in intensive reading, reflection, and discussion of them.

553-3 Consulting in Learning Systems Design and Technology. This course applies current research and technology to the solution of instructional problems in higher education and corporate training environments. The student is guided through the systematic process of identifying instructional and performance problems, specifying learning objectives, analyzing tasks and learners, organizing resources, specifying methods and media, and assessing outcomes. Special approval needed from the instructor.

554-3 Utilization of Educational Media. The utilization of print and non-print materials in instructional implementation and curriculum development. Structured for teachers, media directors, administrators and instructional designers. The increasing role of technological advances in education is stressed as those advances relate to learning theory and curriculum development.

555-3 Instructional Message Design. Emphasizes the use of cognitive theory and research-based principles for creating effective instructional text, pictures, and graphics. Topics include principles of perception, memory, concept, procedure, and principle learning, mental models, problem-solving, motivation and attitude change. A review of research issues in the study of instructional media and message design is included.

556-3 Advanced Development of Interactive Learning Systems. Design, development and evaluation of an online, interactive learning (e-learning) system using instructional design principles and models. Students must successfully complete CI 486 (3,3) or have equivalent training or experience to enroll in this capstone course. Prerequisite: CI 486 (3,3) or consent of instructor.

557-3 Task Analysis. Builds competence in applying the most current task and content analysis techniques used to make explicit the components of complex human performances and knowledge. Includes learning hierarchy analysis, information processing analysis, path analysis, job task analysis, skills analysis, fault tree analysis, concept analysis, knowledge engineering, matrix analysis, and pattern noting. Prerequisite: CI 504 or consent of instructor.

560-3 Content and Learning Management Systems for e-Learning. The course covers the design and development of Content and Learning Management Systems (CMS/LMS) for

the management and online delivery of learning resources in education, business and other training settings. Emphasis will be placed on the rapid development and management of e-Learning systems using CMS/LMS development tools and Web 2.0 technologies.

561-3 Reading and Learning Content and Technical Text.

For secondary and college teachers, and others who desire strategies to help students and workers learn from texts. Special emphasis is on how to help others improve their ability to comprehend, study and use texts and other print material encountered in secondary school and the workplace.

564-3 Curriculum Development for Gifted Students.

Explorations of the knowledge and decision-making required to develop curriculum for gifted students, including philosophy, goals and objectives; designing and sequencing activities; curriculum models for gifted students; evaluation and modification of curriculum. Emphasis is placed on the development of curriculum to be used in schools for gifted students.

566-3 Instructional Strategies for Problem Solving. The focus is on developing those teaching strategies, which will foster and enhance problem solving skills and heuristic thinking. Representative of these teaching skills would be inductive and deductive approaches, discovery and inquiry techniques, and questioning strategies.

570-3 Teaching and Learning Nonfiction Sources for Adolescent and Adult Learners.

This graduate-level course will help students develop instructional materials and curricular designs using non-fiction resources for classrooms at the secondary level and beyond. Students will also have an opportunity to gather, analyze, corroborate, and synthesize student data for the purposes of planning instruction with an emphasis on information sources such as written documents, images, and multimedia. Integrating technology for differentiating instruction, assessment, and content reading for the disciplines (with a specific focus on the social sciences) will also be emphasized.

571-3 Secondary School Curriculum. An introductory course designed to explore the nature and development of the curriculum at the secondary school level. Historical perspective and foundations of curriculum are examined. Functional applications to the public secondary schools are emphasized.

573-3 Perspectives on the Future and Its Schools. Deals with the future development of education and social trends, which will influence that development. Emphasis is placed upon alternative models of education and their social bases.

575-3 Critical Issues in Instructional Supervision. Students will examine the history, nature and evolution of supervision for instructional improvement. Students will be introduced to concepts, theory and research findings from many fields of study that have implications for today's supervisory process. Supervisory assumptions and practices will be examined in light of current knowledge of teaching effectiveness.

576-3 Critical Issues in Teacher Education. Students will examine critical issues, problems, and trends in teacher education. Emphasis is placed on strategies for clarifying the issues, solving the problems and examining the possible impact of the trends.

577-3 Seminar in International Mathematics in Education.

Deals with goals, contents, teaching methods, teacher training, curriculum development and research literature on mathematics education at the international level. Restricted to graduate standing or consent of adviser.

578-3 Advanced Study of Mathematics Education. Study of the practical and theoretical development of mathematics curricula and instruction, and viewing mathematics curricula and instruction from philosophical and psychological perspectives. Restricted to advanced graduate study or consent of adviser.

580-3 Current Trends in Education. Trends, issues, problems in education related to the student, program, school organization, staff, material and media, the school building, and the process of innovation and change.

582-3 Advanced Research Methods in Education. The study and application of advanced skills used in planning, executing, reporting and utilizing educational research. Prerequisite: EAHE 587 and QUAN 505.

583-3 Instructional Theory, Principles, and Practices. Presentation of conceptual formulations and skills concerning instructional theory and principles; foundations of instruction; instructional systems and models; delivery processes (logistics), systems, and maintenance of quality control; and evaluation of teachers and students.

584-3 Curriculum Theory, Foundations, and Principles. The course will emphasize the study of the perspectives on curriculum theory that have guided the development of curriculum practice in the United States. Students will critically examine these perspectives and utilize them to develop and defend positions on contemporary curriculum issues.

585-1 to 15 (1 to 3 per semester) Topical Seminar. A graduate level seminar that involves the study of special problems and related research associated with practical educational situations. Problems available for critiquing and analyzing are the following: (a) Curriculum, (b) Supervision for instructional improvement, (c) Language arts, (d) Science, (e) Mathematics, (f) Reading, (g) Social sciences, (h) Early Childhood education, (i) Elementary education, (j) The Middle school, (k) Secondary education, (m) Instruction, (n) Educational Technology, (o) Environmental education, (p) Children's literature, (q) Family studies, (s) Gifted and talented education, (t) Teacher education. Maximum of six hours toward a Master's degree. Special approval needed from the instructor.

586-3 Curriculum Design and Development. Presentations concerning educational planning and curricular decision-making relating to curriculum: aims, goals, and objectives; nature of knowledge, disciplines, and subjects; curriculum structures: sequence and scope; substantive structural models; content and activity selection, product analysis and production; evaluation; and curriculum modification and change.

587-3 Evaluating Learning and Instructional Programs. The course emphasizes both the evaluation of individual learner performance and program evaluation in the interest of assessing curriculum and instruction effectiveness. The rationales and assumptions supporting criterion-referenced assessment are contrasted with those of norm-referenced assessment. Both qualitative and quantitative data collection strategies are included. Attention is also given to the construction of evaluation reports.

589-3 The Work of the Director of Curriculum and Instruction.

The role of the director of curriculum and instruction is the focus of this course. Such topics as the background, current status, and tasks and functions of the position are examined. Additionally, such broad areas of the director's role as needs assessment, program planning and evaluation, and in-service education planning are covered. Prerequisite: CI 586 or CI 587 or consent of instructor.

590-1 to 15 (1 to 3 per topic) Independent Readings. Directed readings in literature and research in one of the following areas: **(a)** Curriculum, **(b)** Supervision for instructional improvement, **(c)** Language arts, **(d)** Science, **(e)** Mathematics, **(f)** Reading, **(g)** Social sciences, **(h)** Early childhood, **(i)** Elementary education, **(j)** Middle school, **(k)** Secondary education, **(m)** Instruction, **(n)** Educational Technology, **(o)** Environmental education, **(p)** Children's literature, **(q)** Family studies, **(s)** Gifted and talented education, and **(t)** Teacher education. Maximum of four hours toward a Master's degree. Special approval needed from the instructor.

592-3 Mixed Methods in Educational Research. An examination of how to combine qualitative and quantitative research methods and to defend such studies with reference to the tenets of the underlying constructivist and post-positivistic research paradigms. The objective of the course is for students to design and defend a mixed methods educational research study. Prerequisite: EAHE 587 and QUAN 505 or consent of instructor.

593-1 to 15 (1 to 3 per topic) Individual Research in Education. The selection, investigation and writing of a research topic under the personal supervision of a member of the departmental graduate staff, in one of the following areas: **(a)** Curriculum, **(b)** Supervision for instructional improvement, **(c)** Language arts, **(d)** Science, **(e)** Mathematics, **(f)** Reading, **(g)** Social sciences, **(h)** Early Childhood education, **(i)** Elementary education, **(j)** The Middle school, **(k)** Secondary education, **(m)** Instruction, **(n)** Educational Technology, **(o)** Environmental education, **(p)** Children's literature, **(q)** Family studies, **(s)** Gifted and talented education, **(t)** Teacher education. Maximum of three hours counted toward a Master's degree. Special approval needed from the instructor.

594-(2 to 9 per topic) Practicum. For Master's degree students: professional consultation, teaching demonstration, practical application of advanced theory, work with clinical cases, or program development implementation, and evaluation in school systems, community colleges, or universities. In addition, may involve reading and research directed to special problems involved in on-site situations. Practicum is available in the following areas: **(a)** Curriculum, **(b)** Supervision for instructional improvement, **(c)** Language arts, **(d)** Science, **(e)** Mathematics, **(f)** Reading, **(g)** Social sciences, **(h)** Early Childhood education, **(i)** Elementary education, **(j)** The Middle school, **(k)** Secondary education, **(m)** Instruction, **(n)** Educational Technology, **(o)** Environmental education, **(p)** Children's literature, **(q)** Family studies, **(s)** Gifted and talented education, **(t)** Teacher education. A maximum of nine hours credit may be applied toward a Master's degree. Special approval needed from the instructor.

595-(2 to 8 per topic) Internship. Culminating experience for Ph.D. or specialist degree students. Students engage in specialized service areas either in their own or a cooperating

school or school system or university. Weekly on-campus or on-site seminar will be held with the intern supervisor. Internship areas are: **(a)** Curriculum, **(b)** Supervision for instructional improvement, **(c)** Language arts, **(d)** Science, **(e)** Mathematics, **(f)** Reading, **(g)** Social sciences, **(h)** Early Childhood education, **(i)** Elementary education, **(j)** The Middle school, **(k)** Secondary education, **(m)** Instruction, **(n)** Educational Technology, **(o)** Environmental education, **(p)** Children's literature, **(q)** Family studies, **(s)** Gifted and talented education, **(t)** Teacher education. A maximum of eight hours credit may be applied toward a Ph.D. or specialist degree. Special approval needed from the instructor.

597-3 Problem-Based Learning for STEM Education. This course surveys the history and development of Problem-Based Learning (PBL) and its application in Science, Technology, Engineering, and Mathematics (STEM) education and place-based education. Participants will discuss PBL principles and pedagogy and critique or create PBL modules with respect to national and state STEM education standards in support of K-12 classroom implementation, adaptation, assessment, and iterative design of PBL instruction or intervention.

599-1 to 6 Thesis. Minimum of three hours to be counted toward a Master's degree. Restricted to admission to Master's degree program.

600-1 to 32 (1 to 16 per semester) Dissertation. Minimum of 24 hours for the Doctor of Philosophy degree.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Entry into the Master's Degree Program. The master's degree

Economics

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COLLEGE OF LIBERAL ARTS

Graduate Faculty:

Becsi, Zsolt, Associate Professor, Ph.D., University of Wisconsin-Madison, 1991; 2003. Public finance, macroeconomics.

Dai, Chifeng, Associate Professor, Ph.D., University of Florida, 2003; 2005. Industrial organization, public economics, law and economics, and applied econometrics.

Färe, Rolf, Professor, *Emeritus*, Docent, University of Lund, Sweden, 1976; 1978.

Gilbert, Scott, Associate Professor, Ph.D., University of California-San Diego, 1996; 1999. Econometrics, applied macroeconomics.

Grabowski, Richard, Professor, *Emeritus*, Ph.D., University of Utah, 1977; 1979. Economic development, international economics.

Lahiri, Sajal, Professor and *Vandever Chair of Economics*, Ph.D., Indian Statistical Institute, 1976; 2002. International trade, developmental economics, environmental economics.

Laumas, G. S., Professor, *Emeritus*, Ph.D., Wayne State University, 1966; 1990.

Layer, Robert G., Professor, *Emeritus*, Ph.D., Harvard University, 1952; 1955.

Mitchell, Thomas M., Associate Professor, *Emeritus*, Ph.D., Brown University, 1984; 1983. Microeconomic theory; mathematical economics.

Morshed, A.K.M. Mahbub, Associate Professor, Ph.D., University of Washington, 2001; 2004. Macroeconomic theory, International economics, economic growth.

Myers, John G., Professor, *Emeritus*, Ph.D., Columbia University, 1961; 1977.

Primont, Daniel, Professor, *Emeritus*, Ph.D., University of California, Santa Barbara, 1970; 1978.

Sharma, Subhash C., Professor and *Chair*, Ph.D., University of Kentucky, 1983; 1983. Econometrics, statistics.

Sylwester, Kevin, Associate Professor, Ph.D., University of Wisconsin-Madison, 1997; 1998. Macroeconomics, economic development.

Trescott, Paul B., Professor, *Emeritus*, Ph.D., Princeton University, 1954; 1976.

Watts, Alison, Professor, Ph.D., Duke University, 1993; 2001. Microeconomics, game theory, industrial organization, law and economics.

The Department of Economics offers graduate programs that lead to both master's and doctoral degrees. The master's degree is designed to be a twelve- to sixteen-month program in which the student takes courses in theory as well as an applied specialization. The doctoral program is built around a core of courses in microeconomics, macroeconomics and econometrics, and allows the student to specialize in two fields. The coursework towards the doctoral degree is expected to take three years and the writing of a dissertation one year.

Admission

The overall scholastic record and potential of the applicant for admission is more important than prior preparation in specific areas of economics. While undergraduate specialization in economics is desirable, the program is open to students whose undergraduate specialization has been in other fields. However, if a student has not taken intermediate level microeconomics, macroeconomics, and statistics, remedial work may be required before the student can take the required courses for the graduate degree.

Application is done online:

<http://gradschool.siu.edu/applygrad/index.html>.

Additional information about the graduate programs in the Department of Economics is available online at cola.siu.edu/economics/.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for admission to graduate study in economics. Applicants must pay this fee by credit card.

All applicants should take the aptitude portion of the Graduate Record Examination. Information on testing dates and locations may be obtained at www.ets.org or by writing to Educational Testing Service, Princeton, New Jersey 08540. Scores should be sent to Southern Illinois University Carbondale marked "Attention: Department of Economics." All exam scores must be received before admission.

Evaluations of applicants by the department are based on information from the application form, GRE scores, transcripts, and other information.

Applicants not admitted to the Department of Economics who meet the Graduate School requirements may register for remedial courses as nondeclared students. Such persons may be considered for admission to the Department of Economics at a later date, based on their performance in such remedial courses. This option is not available to international students.

Foreign applicants whose native language is not English must take the Test of English as a Foreign Language (TOEFL) or another equivalent test. The Department of Economics requires that the applicant achieve a 550 paper score or a 220 computer score or an 80 internet-based score or above for admission to the graduate program. The TOEFL must be taken no more than 24 months prior to the date for which admission is sought. For information concerning TOEFL testing dates and locations, visit www.ets.org or write to Educational Testing Service, Princeton, New Jersey 08540.

Entry into Ph.D. Program. A student with a master's degree must meet Graduate School admission requirements with a graduate grade point average of 3.25 ($A = 4.0$) or better. A student with a bachelor's degree must meet Graduate School admission requirements with an undergraduate grade point average of 2.7 or better. After meeting these requirements the bachelor's degree student will be initially admitted as a master's student. Upon passing the qualifying exam, taken after the first year of graduate study, the student will be given entry into the doctoral program. Application for entry to the Ph.D. program should be made at the Graduate School website, <http://gradschool.siu.edu/>.

program is intended to serve as a terminal degree. A student with a bachelor's degree must meet Graduate School admissions requirements with a grade point average of 2.7. Application for entry to the master's degree program should be made at the Graduate School website, gradschool.siu.edu/.

Requirements for the Master's Degree

The master's degree prepares students for positions in government and business and for teaching at the junior college level. The general requirements for the Master's degree may be conveniently classified under two broad headings, course and hour requirements and research requirements.

Course and Hour Requirements. Those students who plan to receive the Master's degree as a terminal degree are required to have the following courses:

- Economics 465 Mathematical Economics I
- Economics 463 Applied Econometrics
- Economics 540A Microeconomic Theory I
- Economics 541A Macroeconomic Theory I

Each master's student must take at least one graduate director-approved, two-course specialization. In addition, each master's student must accumulate a minimum total of 30 graduate-level semester hours approved by the director of graduate studies. Of this minimum, 21 hours must be in Economics courses, excluding Economics 408, 440, 441, 443, 507, and 590, and 15 must be in 500-level courses.

Any student who earns six semester hours of C or below in Economics courses taken for graduate credit is subject to dismissal from the graduate program in economics. A minimum grade point average of 3.0 (A = 4.0) in 400- and 500-level economics courses is required excluding Economics 408, 440, 441, 501 and 502. Only 400- and 500-level courses may count toward the master's degree. Graduate students in economics cannot take Economics 408, 440, 441, or 443 for credit toward a graduate degree in economics.

Research Requirements. A Master of Arts degree will be awarded upon completion of a research paper and the course and hour requirements. The research paper is counted as three semester hours of credit as Economics 598. For electronic submission requirements, please go to gradschool.siu.edu/thesis-dissertation-researchpaper/research-paper-guidelines.html. Here you will find detailed information concerning the electronic submission requirements. One copy is to be submitted to the Department of Economics prior to graduation. Under this option, the student must take an additional graduate-level course for three semester hours.

A Master of Science degree will be awarded upon completion of a Master's thesis and the course and hour requirements. The thesis shall be supervised by a committee of at least three members of the graduate faculty and will be counted for six semester hours of credit as Economics 599. (Thus the thesis constitutes 6 of the required 30 semester hours). The student is required to submit the thesis electronically to the Graduate School. For electronic submission requirements, please go to gradschool.siu.edu/thesis-dissertation-researchpaper/etd-guidelines.html. Here you will find detailed information concerning the electronic submission requirements. One copy of the thesis is to be submitted to the Department of Economics prior to graduation.

Requirements for the Doctor of Philosophy Degree

The Ph.D. degree prepares students for teaching and research positions in the academic world, for positions such as senior economist in private industry and consulting firms, and for government positions requiring advanced economic training.

Course Requirements and Qualifying Exam. In the student's first year (Fall/Spring) of graduate work he/she will be required to take the following courses:

- | | |
|------------------|--------------------------|
| • Economics 465 | Mathematical Economics I |
| • Economics 540A | Microeconomic Theory I |
| • Economics 540B | Microeconomic Theory II |
| • Economics 541A | Macroeconomic Theory I |
| • Economics 541B | Macroeconomic Theory II |
| • Economics 567A | Econometrics I |

At the end of the first year (June) the student will take qualifying examinations over microeconomic theory and macroeconomic theory. A student will be allowed at most two attempts at passing each qualifying exam.

Fields of Specialization. A student is required to take two specialized fields in economics. In addition, the student is required to pass a written examination (after completion of the appropriate course work for credit) in one specialized field at the end of the second year. The Department of Economics offers the following fields of specialization: economic development, international economics, monetary theory and policy, applied microeconomics, advanced economic theory, and finance. A student will be allowed to take a field exam at most two times.

Other Required Courses. Students are required to pass the following courses:

- | | |
|------------------|--------------------------|
| • Economics 540C | Microeconomic Theory III |
| • Economics 541C | Macroeconomic Theory III |
| • Economics 567B | Econometrics II |
| • Economics 567C | Econometrics III |

Dissertation. Upon successful completion of the coursework and passing of the qualifying and field examinations, a student will then be admitted to candidacy for the Ph.D. degree. This will normally occur after the third year of work. Following this, the candidate, in consultation with his/her dissertation chairperson, will form a dissertation committee and develop a proposal. After the proposal is approved, the student must complete a dissertation based on original research and successfully defend the dissertation before the faculty.

You are required to submit your dissertation electronically to the Graduate School. For electronic submission of your dissertation, please go to gradschool.siu.edu/thesis-dissertation-researchpaper/etd-guidelines.html. Here you will find frequently asked questions as well as information from UMI (University Microfilm International) regarding electronic submission requirements. One copy of the dissertation is to be submitted to the Department of Economics prior to graduation.

Courses (ECON)

416-3 Financial Economics. Study the role of money within the financial system itself in providing risk-sharing, liquidity and information services. An examination of the bond market, interest rates and the concepts of risk, liquidity, information

costs, taxation and investment maturity. A detailed examination of financial markets, e.g. the markets for stocks, foreign exchange, and market for financial derivatives. Finally, a more detailed account of why and how financial institutions and instruments evolve. Prerequisite: ECON 315 or 341 or consent of instructor.

419-3 Latin American Economic Development. Special attention to contemporary policy issues and alternative strategies for development. Among the topics included are inflation and financial reform, international trade and economic integration, foreign investment and agrarian reform. Prerequisite: 322 or 340 or 341 or consent of instructor.

429-3 International Trade and Finance. Analysis of the pattern and volume of world trade and capital flows; effects of trade and payments on the domestic economy; problems and methods of adjusting to change in the balance of payments. Prerequisite: 340 and 341 or consent of instructor.

431-3 Public Finance II. State and local. Analysis of the economic effects, problems and alternative solutions concerning state and local government expenditures, revenues and debt. Prerequisite: 330 or 340 or 341 or consent of instructor.

440-3 Price, Output and Allocation Theories. A systematic survey of theories of product prices, wage rates, rates of production and resource utilization under conditions of competition, monopolistic competition, oligopoly and monopoly markets. Emphasis is on developing analytical tools useful in the social sciences. Not open to students who have had Economics 340. Prerequisite: 240 or consent of instructor.

441-3 Contemporary Macroeconomic Theory. An examination of the causes of inflation, unemployment, and fluctuations in aggregate economic activity, factors affecting consumption and investment, and the sources of economic growth. Emphasis is on understanding contemporary United States macroeconomic problems and the options for fiscal, monetary and income policies facing the United States government. Not open to students who have had 341. Prerequisite: 241 or consent of instructor.

450-3 History of Economic Thought. An analytical study of the development of economic ideas, with special reference to historical and societal context, central thrust and impact. Such benchmark figures as Smith, Marx, Marshall, Veblen and Keynes are highlighted and major schools of economic thought are identified. Prerequisite: 240 and 241 or 113 or consent of instructor.

463-3 Introduction to Applied Econometrics. Applications of statistical tools to specific economic problems. Numerous examples will be examined in order to achieve this goal. Emphasis will be given to model misspecification, non-classical estimation techniques, data analysis and simultaneous equations. Prerequisite: ECON 308 or equivalent or consent of instructor.

465-4 Mathematical Economics I. A systematic survey of the fundamental mathematical tools for economic analysis. Topics include functions and their properties, including derivatives and integrals. The focus is on calculus techniques for optimization and comparative statics analysis. Prerequisite: ECON 340 or 440 and MATH 140, or consent of instructor.

474-3 Economic Strategies for Business. This course will be concerned with broad principles of microeconomics that underlie all business decision-making. The main topics discussed may include the firm's costs, pricing and research and development decisions under different market structures, price discrimination,

strategies of different business practices, information, advertising, decision-making over time, and decision making under symmetric information. Prerequisite: ECON 240 or its equivalent or consent of instructor.

479-3 Problems in Business and Economics. Application of economic theory and tools of analysis to practical business problems. Cost and demand functions, and forecasting are analyzed from a policy standpoint. Prerequisite: 240, 308 or consent of instructor.

500-3 to 24 (3 per topic) Economics Seminar. A study of a common, general topic in the field of economics with individual reports on special topics. Special approval needed from the instructor.

501-1 to 21 Economics Readings. Readings from books and periodicals in economics. Master's degree students limited to a total of six hours. Special approval needed from the instructor and chair.

502-1 to 4 Readings in Resource Economics. (See FOR 590).

507-1 to 4 (1,1,1,1) Practicum in Undergraduate Teaching. Emphasizes teaching methods, source materials, and preparation of classroom materials. All teaching assistants must enroll. One hour of credit per semester. Graded S/U only.

510-2 Research in Economics: Design, Methodology and Presentation. Systematic approach to economic research. Includes research planning and design, exploration of the various sources of data and most frequently used methodology. The last part of the course is concentrated on techniques for communicating the results of research. Special approval needed from the instructor.

511-3 Advanced Mathematical Economics. A continuation of topics in 465 with more emphasis on proofs. Topics include economic applications of integration, differential equations and real analysis. Prerequisite: 465 or consent of instructor.

517-3 Monetary Economics I. A graduate-level introduction to the field of monetary economics. Students will focus on the core theoretical models to describe and explain the role of money in modern economics. The course emphasizes empirical methods in macroeconomics and reviews current empirical research and evidence on the channels through which money influences economic activity. Students will relate monetary variables to the rates of interest, inflation and unemployment, to deficits and the national debt, and to savings, investment, and output. Prerequisite: 541A or B and 463 or equivalent.

518-3 Monetary Economics II. An advanced graduate-level course in monetary economics. Students will use contemporary macroeconomics models to analyze monetary policy. The course emphasizes macroeconomic theory and the role of underlying frictions in monetary economics. Students will focus on recent developments and controversies in monetary theory and policy as well as on optimal monetary policy under discretion or commitment, monetary policy operating procedures, and the interaction of monetary and fiscal policy. Prerequisite: 541B and 517.

520-6 (3,3) A & B Economic Development Theory and Policy. The two parts deal with the macroeconomic and microeconomic aspects of development economics, respectively.

520A topics include theories of development, structural change, income inequality, natural resources, open economy shocks, and the political economy of development.

520B topics include theories and case studies of famine and famine prevention, gender and development, economics of child labor, and informal credit markets and microfinance.

Prerequisite: ECON 465 and 540A or their equivalent or consent of instructor.

530-3 Foreign Trade. This course covers the determinants of the pattern of trade and possible gains from trade, under both perfect and imperfect competition. It also examines trade policy issues such as optimal tariffs and the relative merits of alternative trade policies. A number of specific topics are also covered, for example: foreign direct investment, trade and the environment, and fair trade. Prerequisite: ECON 465 and 540A or their equivalent or consent of instructor.

531-3 International Finance. Application of theory to current international economic transactions. Emphasis is placed on topics at the frontier of research in international macroeconomics, with empirical studies. Prerequisite: ECON 465 and 541A or consent of the instructor.

533-3 Public Finance Theory and Practice. Historical development of public finance theories with analysis of their policy implications. Prerequisite: 330 or consent of instructor.

534-3 Economics of Taxation. This course examines from a theoretical and applied point-of-view, various economic aspects of taxation. Other government revenue sources may also be analyzed such as inter-governmental grants and debt. Emphasis is on application of microeconomic theory to problems in taxation. Usual topics include: equity in taxation, shifting and incidence of taxes, excess burden of taxes, other economic effects of taxes, tax reform, debt. Prerequisite: 330 and 340, or 440, or consent of instructor.

540A-3 Microeconomic Theory I. The course provides the basic theoretical knowledge necessary for microeconomic research in business and government. Prerequisite: Econ 340 or Econ 440 or consent of instructor and Math 150 or its equivalent or consent from the Director of Graduate Studies in the Economics Department.

540B-3 Microeconomic Theory II. A contemporary course in partial equilibrium analysis. Topics include the theory of the firm, market structure and the theory of the consumer. The course frequently takes an axiomatic approach; consequently there are many formal statements and proofs of theorems. Prerequisite: 465 and 540A or consent of instructor.

540C-3 Microeconomic Theory III. A contemporary course in game theory as applied to economics. Topics include static games of complete and incomplete information with applications to Cournot oligopoly, tragedy of the commons, and auctions; as well as dynamic games of complete and incomplete information with applications to Stackelberg oligopoly, sequential bargaining, imperfect international competition, and job market signaling. Prerequisites: 540A and 540B or consent of instructor.

541A-3 Macroeconomic Theory I. The rigorous development of general equilibrium macroeconomic models to analyze the determination of national income in the context of Classical, Keynesian, Neoclassical and Monetarist economic systems. Also included is the study of key sectoral demand functions. Prerequisite: 340 or 440 or consent of instructor and MATH 150 or its equivalent or consent from the Director of Graduate Studies in the Economics Department.

541B-3 Macroeconomic Theory II. Continuation of 541A.

Analyzes the ideas of New Classical and New Keynesians on the determination of national income. Focuses on the impact of rational expectations and the natural rate hypotheses on the effectiveness of macroeconomic policy. Also included are recent developments in the area of business cycles. Prerequisite: 541A.

541C-3 Macroeconomic Theory III. Recent developments and major issues in contemporary macroeconomic theory. Focuses on incorporating uncertainty, stochastic tools and dynamic analysis into macroeconomic theory. Prerequisite: 541B.

542-6 (3,3) Industrial Organization. (a) Industrial organization I. A study of the variety of forms of competition among firms. Topics include theories of the firm, oligopoly theory, theories of entry, product differentiation and innovation. Prerequisite: 440 and 441. **(b) Industrial organization II.** A survey of government policy toward industry. Topics include antitrust: mergers, concentration and unfair trade practices, regulation of public utilities, peak load pricing, product, safety and environmental regulation. Prerequisite: 440 and 441.

545-3 Resource Economics. A survey of theoretical and institutional aspects of energy production, distribution, consumption and regulation. Topics covered include cartel theory, history of energy use, theory of resource exhaustion, models of energy demand and supply, past and current policy issues, and environmental protection. Prerequisite: ECON 440, or consent of instructor.

546-3 Workshop in Resource Economics. A research seminar on topics related to energy production, distribution, consumption and regulation. Meetings will be divided among presentations of research of (a) faculty, (b) students, and (c) outside speakers, offered every semester. Maximum of three hours toward Master's degree in economics. Prerequisite: 545.

552-3 Seminar in Economic Thought. An exploration of the basic philosophic assumptions which underlie the various types of economic thought with special emphasis upon the historical development of the premises of modern day economic theories.

566-3 Mathematical Economics II. Linear economic models. Linear programming. Input-output analysis and general equilibrium models. Prerequisite: 340 or 440 or 465 or consent of instructor.

567A-3 Econometrics I. This is a course in modern mathematical statistics applied to economics and allied fields. Students will use calculus and linear algebra to apply probability and statistical models to data, via parameter estimation and hypothesis testing. Key topics include probability models, features of probability distributions, sampling distributions, estimation via maximum likelihood, inference via likelihood ratio, score and Wald tests; and asymptotic theory. Applications center on the simple linear regression model and its variants, and students will apply models to data using econometric software. Prerequisite: ECON 465 or consent of instructor.

567B-3 Econometrics II. Further topics in the theory and application of single equation econometric models including model specification, data problems, large sample results, non-spherical disturbances, heteroscedasticity, and autocorrelation. Topics in time series analysis include unit root tests and ARIMA model building. Prerequisite: ECON 465 and 567A or consent of instructor.

567C-3 Econometrics III. Topics covered are systems of regression equations; models for panel data; simultaneous

equations models; time series models: VAR; causality, cointegration, error correction model among others; and estimation and inference in models with discrete and limited dependent variables, i.e., Probit and Logit. Prerequisite: 567B or consent of instructor.

570-3 Seminar in Contemporary Microeconomic Theory. An investigation of recent developments and current controversies in economic theory with emphasis on microeconomic problems. Prerequisite: 540B.

571-3 Seminar in Contemporary Macroeconomic Theory. An investigation of recent developments and current controversies in economic theory with emphasis on macroeconomic problems. Prerequisite: 541B or consent of instructor.

575A-3 Econometric Theory I. Topics include: probability theory; asymptotic theory; linear regression; likelihood ratio, Lagrange multiplier, and Wald tests; stochastic processes; ARIMA models; unit root tests, cointegration, spurious regression, and spurious trend; ARCH models; VAR models; and other topics to be determined by the instructor. Prerequisite: 567B or consent of instructor.

575B-3 Econometric Theory II. Topics include: density estimation methods, nonparametric regression, stochastic frontiers, nonlinear regression models, nonlinear time series models, information matrix tests, generalized method of moments, non-nested hypothesis testing, Bayesian methods, bootstrapping, and other topics to be determined by the instructor. Prerequisite: 575A or consent of instructor.

580A-3 Performance Measurement. Analysis of measurement of efficiency and productivity using frontier techniques. Focuses on theoretical and empirical specification of production frontiers and the evaluation of performance relative to those frontiers. Duality theory is exploited to investigate performance in various economic environments. Prerequisite: 540A and 465, or consent of instructor.

580B-3 Welfare Measurement. A study of the theory and methods of constructing economic measures of price, quantity and other welfare indicators. Prerequisite: 540A, 540B and 465 or consent of instructor.

590-1 to 8 (1 per semester) Seminar in Contemporary Economics. Presentation and discussion of current research in economics. One hour credit per semester. Graded *S/U* only.

598-1 to 3 Research Paper. Preparation of a research paper for a Master's degree. Special approval needed from the instructor.

599-1 to 6 Thesis. Minimum of four hours to be counted toward a Master's degree. Graded *S/U* only.

600-1 to 36 (1 to 16 per semester) Doctoral Dissertation. Hours and credit to be arranged by director of graduate studies. Graded *S/U* only.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Education, Doctoral Program

COLLEGE OF EDUCATION AND HUMAN SERVICES

Faculty in the concentrations listed below participate in this program. Refer to specific concentrations elsewhere in the catalog.

One may pursue a program of study leading to the Doctor of Philosophy degree in education through any of the seven approved concentrations: counselor education, curriculum and instruction, educational administration, health education, quantitative methods, special education, and workforce education and development.

Students must satisfy the requirements of the Graduate School in addition to the College of Education and Human Services' requirements for the Doctor of Philosophy degree in education. General policies pertaining to the Doctor of Philosophy degree in education are enumerated in this section; policies specific to each concentration may be obtained from the appropriate department chair.

For program descriptions of Master of Science in Education degrees, the student should review the material listed in this publication in the appropriate departmental section or consult the appropriate department.

Application

Applicants must submit the standard application materials to the department into which they wish to gain admission. This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Education. Applicants must pay this fee by credit card. Additional data may be requested by the faculty of the specific concentration. The student is encouraged to contact the appropriate departmental executive officer for specific guidelines.

Admission and Retention

The appropriate department reviews all documents relative to the student and makes a recommendation to the dean of the College of Education and Human Services who makes the final admission recommendation to the Graduate School. Retention standards beyond minimum Graduate School standards are established by each concentration and are available from the departmental executive officer of the appropriate department.

Advisement

For each student a doctoral committee consisting of a minimum of five members is constituted and approved according to procedures described in the *Ph.D. Policies and Procedures Manual of the College of Education and Human Services*. Copies of the manual can be obtained from the dean of the College of Education and Human Services. The doctoral committee also serves as the student's dissertation committee.

The program, planned to include all graduate study beyond the master's degree, should be approved at a meeting of the student's committee. The program is then forwarded to the dean of the College of Education and Human Services for final approval and filing.

Program Requirements

Core Classes. Each doctoral student in education must

successfully complete a prescribed core of three semester hours in Introduction to Doctoral Studies in Education (EDUC 510) and three semester hours in either Philosophical and Cultural Foundations of Education (EDUC 511) or Behavioral and Cognitive Foundations of Education (EDUC 512). For each concentration there are also basic and advanced courses which should be completed prior to the student taking the preliminary examination. Information about these specific courses can be obtained from the appropriate graduate program coordinator.

Research Tool Classes. The Ph.D. degree in education is a research-oriented degree. Each doctoral student in education must successfully complete a core of Introduction to Doctoral Studies in Education (EDUC 510) and three semester hours of Introduction to Qualitative Methods (EAHE 587) and three semester hours of Introduction to Quantitative Methods (QUAN 505). In addition, each student must complete a minimum of one other three credit class on research methods (also referred to as "research tool"). A list of approved research tool classes for the Ph.D. degree in education is available in the *Ph.D. Policies and Procedures Manual of the College of Education and Human Services*.

Concentration Classes. Each doctoral student in education must successfully complete a prescribed core of semester hours in their concentration, the number of which varies by concentration. Concentration classes must be completed before the preliminary exam. See the specific department for the concentration class requirements.

Preliminary Examination. All students in the Ph.D. program in education must take the preliminary examination over areas determined by the student's doctoral committee. In addition, the examination may cover areas specific to a concentration. The examination is offered three times a year: Wednesday, Thursday, and Friday of the fifth week of each term.

A student may petition the doctoral committee for permission to take the preliminary examination after successful completion of the research requirement, successful completion of all or most of the course work, and successful completion of the doctoral seminar sequence in education. A student who fails the examination on the initial attempt may take the examination two additional times. If at that time the student has not passed the examination, the student is dropped from the program.

Admission to Candidacy. A student may be advanced to candidacy after the student has completed EDUC 510 Introduction to Doctoral Studies in Education and either EDUC 511 Doctoral Seminar in Philosophical & Cultural Foundations of Education or EDUC 512 Doctoral Seminar in Behavioral and Cognitive Functions of Education, fulfilled the residency requirements for the doctoral degree (see degree requirement in Chapter 1), met the research tool requirement, and passed the preliminary examination. The doctoral committee chair should initiate the admission to candidacy forms and forward the forms to the dean of the College of Education and Human Services. Admission to candidacy is granted by the dean of the Graduate School upon the recommendation of the dean of the College of Education and Human Services. The doctoral degree may not be conferred less than six months after admission to candidacy, except upon approval of the dean of the Graduate

School.

Dissertation. The doctoral committee consists of a Chairperson who is authorized to direct doctoral dissertations and at least 4 others who are authorized to serve on doctoral committees. The committee is appointed by the dean of the Graduate School upon the recommendation of the dean of the College of Education and Human Services. The Chairperson and at least two other members shall be from the student's approved academic concentration. One member shall be from outside the COEHS PhD program. The remaining member can be any other person with SIU graduate faculty status. No more than one member of the five is allowed to have Adjunct graduate faculty status. No more than one member of the five is allowed to have Adjunct graduate faculty status with the SIU Graduate.

In choosing a topic for the dissertation, the candidate should prepare a prospectus for the dissertation and submit the prospectus to the doctoral committee for approval. After the doctoral committee approves the prospectus, the Chairperson of the committee files one copy of the approved prospectus in the office of the dean of the College of Education and Human Services.

Satisfactory completion of the dissertation requirement includes the passing of an oral examination covering the dissertation and related areas.

Courses (EDUC)

500-1 to 12 Clinical Experiences in Teaching. Clinical field experiences or apprenticeship conducted in a public school setting for graduate students. Supervision provided by Cooperating Teacher and University Supervisor. Restricted to admission to graduate programs. Special approval needed from the advisor.

501-1 to 12 Graduate Student Teaching. A requirement for the Master of Arts in Teaching and Alternative Route to Teacher Certification programs. The student teaching experience is necessary for certification by entitlement. Restricted to admission to the M.A.T. or alternative route to teacher certification programs. Lab Fee: \$100.

505-3 Introduction to Quantitative Research in Education. This course is required of all students enrolled in the doctoral program of the College of Education and Human Services. It offers an introduction to the reading of quantitative research literature and the development of quantitative research methods in Education that can be used to address areas of scholarly inquiry within the academic concentrations found in the College.

510-3 Introduction to Doctoral Studies in Education. This seminar is required of all new students enrolled in the Ph.D. program in Education, to be taken at or near the beginning of their studies. The seminar serves as an introduction to doctoral studies and doctoral-level scholarship in Education. It will emphasize each student's development as a critically reflective scholar and address the attitudes, assumptions and practices that underlie scholarly inquiry in the Education field.

511-3 Doctoral Seminar in Philosophical & Cultural Foundations of Education. This seminar is one of two course options for all students pursuing a doctoral program degree in the College of Education and Human Services. The primary

objectives are to aid in the development of the Doctoral student's own nature and reflective theory of education; to help students pursue their scholarly activities in relation to the whole field of education; and to make the student aware of the resources of scholarship in other disciplines which might be said to be foundational to education. Restricted to admission to the Ph.D. program in education.

512-3 Doctoral Seminar in Behavioral and Cognitive Foundations of Education. This seminar is one of two course options for all students pursuing a doctoral degree in Education. The seminar focuses on the critical examination of the psychological basis of pedagogical theory; a review of behavioral, cognitive and motivational theories; and a preliminary assessment of empirical research related to psychology of instruction. Restricted to admission to the Ph.D. program in education.

550-1 to 10 Experimental Education. Offered for purposes of testing new and experimental courses and series of courses within the College of Education. Special approval needed from the instructor.

Educational Administration

ehs/siu.edu/eahe/
eahe@siu.edu

COLLEGE OF EDUCATION AND HUMAN SERVICES

Graduate Faculty:

Colwell, Willaim Bradley, Professor, Ph.D. and J.D., University of Illinois at Urbana-Champaign, 1996. Education law and policy, collective bargaining.

Dively, John, Clinical Assistant Professor, Ed.D., Illinois State University, 1995, J.D., Southern Illinois University, 1985; 2014.

Donahoo, Saran, Associate Professor and Chair, Ph.D., University of Illinois at Urbana-Champaign, 2004; 2004.

Dunn, Randy, Professor, Ed.D., University of Illinois at Urbana-Champaign, 1991. Educational administration.

Eaton, William E., Professor, *Emeritus*, Ph.D., Washington University, 1971; 1971.

Goldman, Samuel, Professor, *Emeritus*, Ph.D., University of Chicago, 1961; 1980.

Green, Judith A., Associate Professor, Ph.D., Purdue University, 1990; 2005. School leadership.

Lewin, Elizabeth, Assistant Professor, *Emerita*, Ed.D., University of Sarasota, 1997; 2003. Educational administration.

The Department of Educational Administration and Higher Education offers an approved major in educational administration leading to the Master of Science in Education degree. It also provides courses and instructional personnel for doctoral students who wish to concentrate in educational administration at the doctoral level. All degrees are NCATE approved. Interested applicants should direct inquiries to the admissions clerk of the department.

The Department of Educational Administration and Higher Education works cooperatively with the departments of Curriculum and Instruction, Counseling, Quantitative Methods, and Special Education, and Workforce Education and Development in administering the State of Illinois General Administrative Certificate for persons seeking positions as principals or directors of special education or vocational education. A master's degree and two years of public school teaching (or its equivalent), are required for the certificate. Students must make application for the administrative certification program through the department.

This program requires a nonrefundable application fee that must be submitted with the application for Admissions to Graduate Study in Educational Administration. Applicants must pay this fee by credit card.

Master of Science in Education Degree

The Master of Science in Education degree in educational administration is a cohort program, with admissions once a year. Contact the department of application deadline and cohort start date information. The program includes a 36 semester hour core consisting of:

- EAHE 501 Vision and Planning for School Improvement
- EAHE 503 Building Collaborative Structures and Systems of Professional Practice
- EAHE 504 School Leadership through Personnel Evaluation

and Administration

- EAHE 509 School Community Relations and District Policy
- EAHE 511 Leading Curriculum and Assessment
- EAHE 519 School Law and Educational Policy
- EAHE 521 Leadership for Equity - Special Populations
- EAHE 523 Effective Management and Operations: Finance, Facilities, Technology & Grants
- EAHE 538 Education, Policy, and Social Forces
- EAHE 548 Developing Professionals and Leading the Inquiry of Professional Practice
- EAHE 595 Principal Internship (6 credit hours)

Curriculum course (e.g. EAHE 511 Leading Curriculum and Assessment)

Social Foundations course (e.g. EAHE 536, 538, 540, 542, or 544)

Law course (e.g. 519); and EAHE 595-3 A.) Elementary School Internship; B.) Middle School Internship; or C.) Secondary School Internship.

Students have the option of enrolling in EAHE 593A-L-3 (Individual Research) or EAHE 599-3 (Thesis) and writing a research paper or a thesis in lieu of EAHE 547.

Master of Science in Education Degree/J.D. in Law

A concurrent degree in educational administration and law is designed to enhance students' knowledge of the increasingly litigious areas of education law. Specifically, the program is designed to educate practitioners in law and educational administration to effectively utilize the problem-solving strategies and techniques of both disciplines. Students prepared in this program will develop an understanding of the ethics, language, research, history, and processes of both professions. Individuals so trained will be uniquely prepared for careers that combine both legal and educational needs, such as K-12 administration, public policy leadership roles, and student or employee advocacy. In addition, strengthening the academic training of lawyers and school administrators will enhance the quality of research performed in both disciplines, as well as enhance the quality of publications in both fields of study. Students with this joint degree will be uniquely prepared to address the myriad of problems in our society that present complex legal and educational issues. Students who complete this program will have enhanced educational and professional opportunities both inside and outside academia. Students must meet the requirements of admission and be admitted separately to the Educational Administration program and the School of Law. Students currently enrolled in the educational administration or law programs must have a minimum GPA before they may enroll in the concurrent program. The minimum GPA for education administration is 3.0 and for law is 2.5. Educational Administration students interested in this program should consult with the Educational Administration Graduate Program Director.

Doctor of Philosophy Degree in Education

The Department of Educational Administration and Higher Education participates in the doctoral program in education with an approved concentration in educational administration. See the description of the Ph.D. degree in education. The Department also administers a cooperative doctoral program

with SIU Edwardsville.

Inquiries regarding application to their programs should be directed to the admissions clerk of the Department of Educational Administration and Higher Education.

Academic Standing

Each student pursuing a degree, certificate, or endorsement offered by the Department of Educational Administration and Higher Education (EAHE) must establish and maintain adequate academic standing in order to complete the selected program. To be sure, the Academic Standing expectations in the Department are in addition to the Satisfactory Progress Standards established by the Graduate School. (Refer to the Financial Assistance section of the Graduate Catalog for more information.) In an effort to promote and support program completion, EAHE defines Academic Standing as follows:

Academic Standing

Adequate: Student actively engages in at least one of the following based on the structure of his/her academic program:

- Takes classes annually that count toward program completion (not including continuing enrollment credit)
- Completes internship(s)
- Participates in preliminary examinations
- Conducts research as illustrated by the scheduling of a prospectus or defense
- Fulfills other requirements in his/her academic program
- Maintains regular contact with his/her faculty advisor (at least once per semester)

Results: Student will continue to work on completing his/her academic program.

Inadequate: Without attaining a formal leave of absence (requested one semester at a time with a maximum of two semesters during a degree program) from the Department and the Graduate School, the student neglects to do at least one of the following based on the structure of his/her academic program:

- Take classes annually that count toward program completion (not including continuing enrollment credit)
- Complete internship(s)
- Participate in preliminary examinations
- Conduct research as illustrated by the scheduling of a prospectus or defense
- Fulfill other requirements in his/her academic program

Additionally, the student does not maintain contact with or respond to communication from his/her faculty advisor, program director, and/or department chair.

Results: The Department will alert the student on what he/she needs to do to attain Adequate Academic Standing. The student will receive time to meet these requirements based on the availability of course offerings, examinations, or other missing requirements. Following the satisfaction of the missing requirements, the Department will reassess academic standing of the student.

Delinquent: Over a sustained period without attaining a formal leave of absence from the Department and the Graduate School, the student repeatedly fails to do at least one of the following based on the structure of his/her academic program:

- Take classes annually that count toward program

completion (not including continuing enrollment credit)

- Complete internship(s)
- Participate in preliminary examinations
- Conduct research as illustrated by the scheduling of a prospectus or defense
- Fulfill other requirements in his/her academic program

OR

The student does not maintain contact with or respond to communication from his/her faculty advisor, program director, and/or department chair over a sustained period.

OR

The student fails to complete all of the program requirements within the specified time limit.

Results: The Department will alert the student to his/her academic deficiencies and provide an opportunity for the student to author a written appeal to this status within a specified time limit. This appeal should include the steps that the student intends to take to address academic deficiencies. The Department will respond upon receipt of the student's written appeal.

If the Department elects to approve the student's written appeal, the student will receive a specified period of time to fulfill the conditions of the appeal. Successful completion of these conditions will lead to a reassessment of the academic standing of that student.

A student who fails to provide or satisfy the conditions of a written appeal may be subject to dismissal from his/her academic program and the Graduate School.

As specified by the Graduate School, it is the responsibility of each student to keep the University and the Department apprised of his/her up-to-date contact information. (Refer to the Financial Assistance section of the Graduate Catalog for more information.)

Program Expectations and Time Limits

Once enrolled, the Department expects each student to make continuous academic progress toward completing his/her specified program. Please refer to the information below to learn more about the expectations for your specific program.

Master's Degrees, Certificates, and Endorsements

Upon admission to pursue a master's degree, certificate, and/or endorsement offered by EAHE, the Department will expect students to maintain adequate academic standing. To maintain this status, each student must enroll in, complete, and pass courses, internships, exams, and other requirements that lead to the completion of his/her specified academic program. As specified by the Graduate School, each student will have six calendar years, from the date of initial enrollment, to complete all of the requirements for his/her specified academic program. (Refer to the Degree Requirements section of the Graduate Catalog for more information.)

Doctoral Program

The Department will expect students to maintain adequate academic standing for the duration of their enrollment in the Doctoral Program. To establish and maintain this status, each doctoral student must enroll in, complete, and pass courses,

internships, program of study, exams, research elements, and other requirements that lead to the completion of his/her degree. All requirements completed prior to advancing to candidacy will remain valid for 10 calendar years. If a student does not advance to candidacy within the 10-year period, the student may face additional academic requirements or dismissal from the Doctoral Program. As specified by the Graduate School, each doctoral student will have five calendar years to complete the remaining elements of his/her degree program after advancing to candidacy. (Refer to the Degree Requirements section of the Graduate Catalog for more information.) If a student does not complete his/her doctoral degree within five calendar years after advancing to candidacy, the student may face additional academic requirements or dismissal from the Doctoral Program.

Written Appeals

Any student enrolled in a program offered by EAHE may author a written appeal regarding his/her academic standing. Written appeals should include the following:

- Your name (according to University records), DAWG tag #, and current contact information (postal address, phone, and email).
- An outline detailing why the Department should allow you to remain an active student in your specified program.
- A description of the difficulties or any extraordinary circumstances that have inhibited your progress toward completing your degree, certificate, or endorsement.
- A specific timeline of strategies and plans that you will use to make satisfactory progress toward program completion from this point forward. Note: if the faculty members choose to reinstate you as a student, we will regard this timeline and expressed strategies as a contract. Failure to make progress under these conditions will be cause for immediate dismissal from the specified academic program without the opportunity for any further appeals.
- Identification of and established communication with a current EAHE faculty member who has agreed to serve as your adviser and will assist you in completing your program.

Upon receipt of notification that the Department deems the student's academic standing to be either Inadequate or Delinquent, the student will have 45 calendar days to provide a written appeal to the Department. If a student chooses not to author a written appeal regarding his/her academic standing, then the original determination issued by the Department will remain and the Department will inform the Graduate School of the student's status, which may result in dismissal from the specified program and the Graduate School. Students who disagree with the final decision issued by the Department must refer to the Graduate Student Academic Grievance Policy established by the Graduate School. (Refer to the Academic Grievances Policy/Procedures section of the Graduate Catalog for more information.)

Courses (EAHE)

402-1 to 3 Principles of Student Personnel Group Work. Acquaints the student with group work possibilities and functions in higher education.

470-3 College Student Sexuality. (Same as WGSS 470) Seminar

designed to provide students with a strong grounding in the field of college student sexuality and sexual identity, covering the lived experiences of U.S. college students, the construction of sexualized collegiate identities through U.S. history, and how institutions of higher education have attempted to regulate, control, and (intentionally as well as inadvertently) effect college student sexuality.

500-3 Educational Research Methods. Introduction to educational research and the variant methodologies used in conducting studies within institutional settings. Both quantitative and qualitative approaches will be examined.

501-3 Vision and Planning for School Improvement. In this graduate level course, school professionals will be introduced to the role and functions of the school principal as defined in federal, state, and local statutes. It will also address the variations of that role based on school level (Pre-K, elementary, middle, and high school). Professionals will be able to define and conceptualize what it means to be an instructional leader and the notion of distributed leadership. Professionals will gain an understanding of the needs of all students (ELL/bilingual; special needs, other). Professionals will understand how literacy and numeracy instruction impacts student learning and how student performance data informs the school vision and plans for school improvement.

503-3 Building Collaborative Structures and Systems of Professional Practice. In this graduate level course, school professionals will focus on structures that allow engagement between educators on issues of practice (i.e., professional learning communities, communities of practice) as a means for leaders to support the development of organizational goals, group and individual student, parent involvement, professional teaching/learning, and school success. School professionals will learn to track cohort data to determine the successes of groups and subgroups as a means to determine whether or not school culture is unified and cohesive. School professionals will apply theory to practice as they engage in decision-making activities involving school-wide change processes and monitoring effective instruction, expanding upon their awareness of the 2013 Illinois Professional Teaching Standards that foster a culture of student learning.

504-3 School Leadership through Personnel Administration and Evaluation. In this graduate level course, school professionals will acquire knowledge and skills to become qualified evaluators of licensed teachers. School professionals will learn to collaborate using observation and conversation to provide feedback to change teaching practices. Techniques to collect, analyze, and accurately document objective data will be learned and practiced with the goal to acquire the skills to rate the professional/instructional performance of teachers and other licensed school personnel. Restrictions: Admitted to a PK-12 graduate program in COEHS.

505-3 The Administration and Supervision of the Middle School. Reviews the philosophy of the middle school concept and emphasizes the role of the principal in the areas of management, supervision of human resources, program development, the direction of students and the concern for ethical standards of operation.

506-3 The Administration and Supervision of the Secondary School. Deals with problems met specifically by the high school principal. Emphasizes the principal's role in relation

to guidance, curriculum, schedule-making, extra-curricular activities, public relations, budgeting of time, etc.

508-3 Student Development Theory. A study of the major theories of human development as applied to college students with implications for the student affairs specialist. Restricted to students admitted to master's degree or certificate in higher education, or consent of instructor.

509-3 School Community Relations and District Policy. In this graduate level course, school professionals will learn to achieve the school's vision and obtain support for school improvement through effectively communicating and collaborating with the central office, faculty and staff, school families, and community members. School professionals will define community in terms of diversity, develop plans to build a cohesive school community, connect research with the professional context, engage in effective decision-making practices, and communicate results to constituents using appropriate written and verbal formats.

510-3 Higher Education in the United States. An over-view of American higher education in historical and sociological perspectives: its development, scope, characteristics, issues, problems, trends and criticism. Restricted to students admitted to master's degree or certificate in higher education, or consent of instructor.

511-3 Leading Curriculum and Assessment. In this graduate level course, school professionals will learn to promote a shared vision of the elements of school and curriculum that make higher achievement possible, setting high expectations for all students to learn high-level content. Through this course, the school professional establishes effective curriculum delivery systems and utilizes leadership and facilitation skills to effectively manage curricular change. Additionally, the school professional promotes the success for all students by using data to initiate and continue improvement in school and classroom practices and increased student achievement. The school professional will accomplish these course goals by acquiring an understanding of the use of rigorous formative, interim, and summative assessments.

513-3 Organization and Administration in Higher Education. Theories and practices in governance of various types of higher education institutions with attention to problems of formal and informal structures, personnel policies, decision making, institutional self-study and societal-governmental relations. Restricted to students admitted to master's degree or certificate in higher education, or consent of instructor.

514-3 Case Studies in Higher Education. This course is designed to allow graduate students studying to be administrators in higher education practice at analyzing problems and issues in postsecondary education, as well as problems and issues facing college students. Extended, semester-long-case studies are utilized. Prerequisite: EAHE 508 or consent of instructor.

515-3 Student Affairs Administration. Study of organization, functions, and under girding principles and policies of student development and the related student personnel services and programs in contemporary colleges and universities including community colleges. Restricted to students admitted to master's degree or certificate in higher education or consent of instructor.

516-3 College Students and College Culture. Study of the nature of students, the impact of the college on student development, and the nature of the college as a unique social

institution. Study of student subcultures and the interaction between students, institutions, and communities. Restricted to students admitted to master's degree or certificate in higher education, or consent of instructor.

517-3 The Legal Framework of Education. A study of administrative, judicial, statutory and constitutional laws which have application in American public schools.

518-3 College Teaching. Emphasis is given to teaching and learning styles, the teaching-learning process, specific methods of teaching, strategies to improve teaching, resources available to the classroom teacher, and methods of evaluating teaching. Other topics will include: models of effective teaching behavior, academic freedom and due process. Course also open to teaching assistants from other departments.

519-3 School Law and Educational Policy. In this graduate level course, school principal candidates will become acquainted with fundamental legal issues that impact P-12 schools. The candidates will acquire knowledge to understand, respond to, and influence the larger political, legal, social, economic, and cultural context while making ethical decisions, promoting democratic values and building equitable and just learning communities.

520-1 to 6 Current Issues in Educational Administration. An examination of current issues that affect the various administrative levels in educational systems. The issue(s) selected receives intensive treatment and review. This class is offered specifically for those seeking the superintendent's endorsement.

521-3 Leadership for Equity: Special Populations. In this graduate level course, school professionals will learn the role of educational leadership in promoting and supporting educational equity as a critical dimension of democracy, social justice, and related legal aspects. They will consider the moral/ethical, contextual, communal, dialogic, and transformative dimensions of school leadership that support the development of an equitable school environment, with particular emphasis on special programming for students with disabilities, economically disadvantaged, homeless, gifted, early childhood, English-language learners, and racial/ethnic minority students.

523-3 Effective Management and Operations: Finance, Facilities, Technology & Grants. In this graduate level course, school professionals will acquire skills for successful school management of finances, facilities, technology and grants. The course covers vital aspects of managing fiscal, human, and material resources that facilitate student learning, safety and support curriculum and instruction. Restricted to admission to a PK-12 graduate program in COEHS.

524-3 Curriculum Design and Policy. A study of assumptions, materials, methods and evaluation in the designs of various curricula in colleges and universities, with attention to curriculum resources and policy.

525-3 Equity and Diversity in Higher Education. This course is designed to educate students in two ways: by broadening understanding and deepening readings into diverse higher education populations and issues, and by applying those understandings and readings to their practices as postsecondary administrators and educators.

526-3 The Community College. A study of the characteristics and functions of the community or junior college in American

higher education. Course content aids the student in developing a general understanding of the philosophy, objectives, organization, and operations of this significant institution.

528-3 Finance in Higher Education. A study of financing higher education in American society and related economic aspects. Emphasis is given to sources of funds and management of financing in colleges and universities including budgeting, control, accountability and current trends. Restricted to students admitted to master's degree or certificate in higher education, or consent of instructor.

530-3 Historical Research in Education. Seminar designed to explore the literature, methods and possibilities of historical research in education.

535-1 to 14 (1 to 3 each) Higher Education Seminar I. A series of seminars for specialized study of areas of administrative practice and policy. **(a)** Student organization and activities advising, **(b)** Law and higher education, **(c)** Student financial assistance, **(d)** Admissions and records, **(e)** Academic and faculty administration, **(f)** Current issues in student affairs, **(g)** Housing administration, **(h)** Non-traditional students, **(i)** Gender in higher education (same as WGSS 535), **(j)** Student union administration, **(k)** Special topics.

536-3 History of Education in the United States. An historical study of the problems of American education.

537-3 The Adult Learner. The focus of study will be adult learners, their motivations, learning styles, needs, goals, life stages, life cycles and developmental patterns. Implications for adult learning will be sought.

538-3 Education, Policy, and Social Forces. In this graduate level course, students will examine the foundations of educational policy and practice. Students will develop the ability to critically analyze historical and contemporary issues in American education by exploring the social, political, economic, and cultural context of education. Students will be able to evaluate educational policies and practices in light of various assumptions, ideals, and values about public education. This knowledge will enable educators to understand the broader social and political forces that shape their educational community (i.e., students, faculty, and staff) and their roles as educational leaders.

542-3 Contrasting Philosophies of Education. An examination of current educational problems and trends in the light of contrasting philosophies of education.

543-3 Professional Negotiations. An investigation of the theory and practice of professional negotiations. Emphasis will be placed on understanding the roles of adversarial negotiations. Use will be made of cases and simulations.

544-3 Education and Culture. A study of the concept of culture and its relation to the process of education.

545-1 to 16 (a through j, 1 to 3 each; s, 1 to 8) Higher Education Seminar II. A series of seminars for scholarly inquiry into significant aspects of higher education. **(a)** Community college administration, **(b)** Federal initiatives in higher education, **(c)** Institutional policy research, **(d)** Current issues in higher education, **(e)** Higher education administration, **(f)** Institutional finance and administration, **(g)** History of higher education, **(h)** Sociology of higher education, **(j)** Adult and continuing education, **(s)** Selected topics.

547-3 Evaluating Educational Research. The goal of this

course is to develop student skills as consumers of research in education. Standards and practices in multiple traditions of educational research are reviewed in order to help students critically read, assess, and evaluate research. Restricted to master's degree and certificate in higher education, or consent of instructor.

548-3 Developing Professionals and the Inquiry of Professional Practice. This graduate level course, school professionals learn to critically read, evaluate and apply educational research so that they can engage their school systems in continuous inquiry to positively affect student achievement. School professionals will develop an action research project proposal designed to appropriately address a building-level issue. Students will learn to lead action research through the development of sound research design.

550-3 School Business Administration. A study of the principles and practices governing management of business affairs of a public school system. Included are such topics as revenues, expenditures, accounting, auditing, reporting and applications of electronic data processing as a management tool. Practical experience is given in using the Illinois financial accounting manual as well as other managerial procedures. Detailed study is made of the role of the school business administrator in the local school district.

551-3 Policy and Politics in American Education Systems. An examination of the political setting of educational administration and a general study of public policy in the American educational system. This course is open to students in certification and doctoral programs only. In addition to educational leadership related to the politics and policy of education, emphasis is given to innovative and contemporary practices of school administration.

553-3 Planning Processes and Policy Development. Surveys issues involved with accountability in education. Explores in some detail various planning models. Examines concepts and strategies in public policy development.

555-3 Leadership and Change in Education Organizations. An advanced seminar devoted to the study of leadership and change in the administration of complex education organizations. Particular emphasis is placed on organizations as social units that pursue specific goals, which they are structured to serve. Leadership and change are examined in terms of how they can influence organizational goals, organizational structure and organizations and the social environment.

556-3 The School Superintendent and Board of Education. Focuses on superintendent-school board relationships. It investigates the administrative team's role and functions as they relate to leadership in educational policy making.

557-3 Program Development and Evaluation. This course is designed to enable an administrator to develop, implement, and evaluate a school or agency program from inception through final assessment. An emphasis will be placed upon formal and informal means of formative and summative processes utilizing evaluation diagnostics and instrumentation. Formalized accreditation standards and guidelines will also be examined.

558-3 Personnel Evaluation and Administration. This course will provide the administrator with the concepts, strategies and assessment measures to evaluate and manage personnel in both simple and complex organizational settings.

564-3 Seminar in Ethics and Social Justice in Education. The goals of this course are to provide educational leaders with a framework for understanding the dynamics of oppression, to offer tools for ethical decision making, and to increase awareness and responsibility toward social justice issues in education.

575-3 Women in Higher Education. (Same as WGSS 575) The goal of this course is to provide an overview of women in higher education. Topics that will be considered are: feminism's impact of women in higher education; the division of labor for women (including faculty and professional staff positions); historical and sociological perspectives of access to higher education including curriculum and pedagogy.

576-3 College Men and Masculinities. (Same as WGSS 576) This course is a readings-based seminar covering concepts of masculinity as demonstrated by collegiate men in the United States. The readings in this course cover cultural as well as identity elements of what being a "college man" means (and how that definition has changed over time and contexts). The readings consist of historical, contemporary, and theoretical scholarship concerning collegiate masculinity.

587-3 Introduction to Qualitative Research. This course introduces students to qualitative research in education. The course examines the foundations, design, methods and analysis of qualitative research. Course readings include both philosophical texts about the foundations and purposes of qualitative inquiry, and methodological readings about the hands-on application of research techniques.

588-3 to 6 General Graduate Seminar. Selected topics or problems related to administration and leadership in education.

589-1 to 3 Doctoral Research Seminar. Limited to doctoral students formulating and preparing research designs for investigation and implementation. Graded *S/U* only. Special approval needed from the instructor.

590-1 to 6 Readings. Advanced reading in one of the following areas. (a) Administration, (b) Buildings, (c) Supervision of curriculum, (d) Finance, (e) School law, (f) Supervision, (g) Comparative education, (h) History of education, (i) Philosophy of education, (j) Sociology of education, (k) Adult and community education, (l) Higher education. Special approval needed from the instructor.

591-1 to 6 Individual Study. Individual inquiry into selected problems or special topics in higher education under supervision of a graduate faculty member. Graded *S/U* only. Special approval needed from the instructor.

593-1 to 3 per topic Individual Research. Maximum of six hours toward master's degree. Selection, investigation and writing of a research assignment under the personal supervision of a graduate faculty member in one of the following areas. (a) Administration, (b) Buildings, (c) Supervision of curriculum, (d) Finance, (e) School law, (f) Supervision, (g) Comparative education, (h) History of education, (i) Philosophy of education, (j) Sociology of education, (k) Adult and community education, (l) Higher education. Graded *S/U* only. Special approval needed from the instructor.

594-3 Advanced Qualitative Research. This course is a doctoral-level seminar in qualitative research. The course builds on EAHE 587, "Introduction to Qualitative Research," by focusing on the design and implementation of an independent qualitative research project. As such, this course emphasizes

research design, conceptualization and analysis. Course readings review some of the foundations of qualitative inquiry, and include texts that focus on research design and modes of qualitative analysis. Prerequisite: EAHE 587.

595-2 to 6 Principal Internship. The School Principal Internship is a sustained, continuous, structured, and supervised learning opportunity for practicing principals (interns) to observe firsthand the role and function of the school principal. The internship takes place within 12 months during which students complete a total of 6 credit hours.

597-1 to 6 Superintendent Internship. An internship conducted in a central administrative setting for fulfillment of the state of Illinois' Level III Administrative Certificate. Special approval needed from the student's adviser.

598-1 to 8 Internship in Higher Education. The internship provides an opportunity for practical experience related to college level teaching or administration. Each student must obtain prior approval from his/her advisor before registering for or starting an internship. Additionally, each student must pass all of the assigned internship requirements in order to receive a pass for the course. Special approval needed from the advisor.

599-1 to 6 Thesis.

600-1 to 36 (1 to 12 per semester) Dissertation. Minimum of 24 hours to be earned for the Doctor of Philosophy degree.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Electrical and Computer Engineering

<http://engineering.siu.edu/elec/>

ecedept@siu.edu

COLLEGE OF ENGINEERING

Graduate Faculty:

Ahmadi, Reza, Assistant Professor, Ph.D., Missouri University of Science and Technology, 2013; 2013. Power electronics, electric drive systems, renewable energy harvesting, and smart grid technologies.

Ahmed, Shaikh S., Professor, Ph.D., Arizona, 2005; 2007. Nanotechnology, semiconductor devices and circuit design, simulation and characterization.

Anagnostopoulos, Iraklis, Assistant Professor, Ph.D., National Technical University of Athens, 2014; 2015. Many-core architectures, run-time resource management, embedded systems.

Botros, Nazeih M., Professor, *Emeritus*, Ph.D., University of Oklahoma, 1985; 1985. Digital hardware design, digital signal processing, digital instrumentation, neural networks, robot sensing, and bioengineering.

Chen, Kang, Assistant Professor, Ph.D., Clemson University, 2014; 2015. Software-defined networking (SDN), network function virtualization (NFV), vehicular networks, mobile opportunistic/ad hoc networks.

Chen, Ying (Ada), Associate Professor, Ph.D., Duke, 2007; 2007. Biomedical imaging, image reconstruction, digital tomosynthesis, image quality analysis, signal and image processing, simulation and computing.

Daneshdoost, Morteza, Professor, Ph.D., Drexel University, 1984; 1984. Electric power systems, linear systems and circuits, control systems optimization techniques, expert systems, computer graphics, MMI.

Galanos, Glafkos D., Professor, *Emeritus*, Ph.D., University of Manchester, England, 1970; 1987. Power systems, HVDC transmission, power electronics systems.

Gupta, Lalit, Professor, Ph.D., Southern Methodist University, 1986; 1986. Computer vision, pattern recognition, digital signal processing, neural networks.

Haniotakis, Themistoklis, Associate Professor, Ph.D., University of Athens, 2008; 2013. Digital VLSI design and test, RF IC design and test, low power VLSI design, and fault-tolerant systems.

Harackiewicz, Frances J., Professor, Ph.D., University of Massachusetts-Amherst, 1990; 1989. Electromagnetics, antenna theory and design, microwaves, microstrip phased arrays and anisotropic materials.

Hatziaodoniu, Konstantine, Professor, Ph.D., West Virginia University, 1987; 1987. Power systems modeling, simulation and control, high voltage DC transmission, power electronics, power systems transient.

Kagaris, Dimitrios, Professor, Ph.D., Dartmouth College, 1994; 1995. VLSI design automation, digital circuit testing, communication networks.

Komae, Arash, Assistant Professor, Ph.D., University of Maryland, College Park, 2008; 2015. Control systems, microrobotics, signal processing, estimation theory.

Lu, Chao, Assistant Professor, Ph.D., Purdue University, 2012; 2015. VLSI system design, device-circuit co-design, 3D IC.

Osborne, William, Professor, *Emeritus*, Ph. D., New Mexico State University, 1970; 2005.

Pourboghra, Farzad, Professor, *Emeritus* Ph.D., University of Iowa, 1984; 1984. Optimal control, robust and adaptive control, dynamic neural networks, robotics, embedded control systems, sensor networks.

Qin, Jun, Assistant Professor, Ph.D. Duke University, 2008; 2012. Sensors and instrumentation, data acquisition, medical devices, therapeutic ultrasound, haptics.

Sayeh, Mohammad R., Professor, Ph.D., Oklahoma State University, 1985; 1986. Neural networks, optical computing, image processing, stochastic modeling, quantum electronics.

Tragoudas, Spyros, Professor and *Chair*, Ph.D., University of Texas at Dallas, 1991; 1999. Design and test automation for VLSI, embedded systems, computer networks.

Viswanathan, Ramanarayanan, Professor, *Emeritus* Ph.D., Southern Methodist University, 1983; 1983. Detection and estimation theory, spread spectrum communication, communication theory, signal processing.

Wang, Haibo, Professor, Ph.D., University of Arizona, 2002; 2002. Mixed-signal VLSI design and testing, digital VLSI, VLSI design automation.

Weng, Ning, Associate Professor, Ph.D., University of Massachusetts at Amherst, 2005; 2005. High performance routers, network processors, system-on-a-Chip, computer architectures.

Master of Science Degree in Electrical and Computer Engineering

The College of Engineering offers graduate programs leading to the Master of Science and Doctor of Philosophy degrees. The Department of Electrical and Computer Engineering offers programs of study and research leading to the Master of Science degree in Electrical and Computer Engineering and the Doctor of Philosophy in Electrical and Computer Engineering. The Department provides a rich environment for educational and professional advancement in the following areas:

Antennas, circuits and systems theory, electromagnetics, robust and adaptive control, robotics, embedded control, MEMS, plasma processing, energy conversion, power systems, power electronics, pattern recognition, image processing, biomedical engineering, neural networks, optical computing, stochastic modeling, wireless communications, detection and estimation theory, communication networks, mobile ad hoc networks, sensor networks, digital systems, programmable ASICs design, bioengineering, computer architecture, CMOS VLSI, fault tolerance, mixed signal testing and design, low power system design, hardware/software co-design, synthesis and verification of digital systems, physical design automation, and VLSI testing.

The ECE programs of study provide a balance between formal classroom instruction and research, and are tailored to the individual student's academic and professional goals. Graduates of the program enjoy excellent employment opportunities and are highly recruited worldwide in industry, government, and academia.

Admission. The program is designed for individuals holding a Bachelor of Science degree in electrical or computer engineering or related field. Qualified applicants with Bachelor of Science in other areas of engineering and science may be able to enroll in the program with additional preparation. (Approved by the Department on a case-by-case basis).

Admission to the program is based on the following factors: grade point average, class ranking, GRE scores (especially quantitative) and faculty recommendation letters. The admission requirements of the Department are higher than the minimum requirements of the Graduate School. The TOEFL score requirement for international applicants is 550 paper based and 80 computer based. Admission to the program is granted by the Chair of the Department, upon recommendation by the faculty.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Electrical and Computer Engineering. Applicants must pay this fee by credit card.

Requirements. The Department offers two different programs leading to the Master of Science degree, the Thesis and the Non-thesis program. The requirements for each of the programs are as follows:

The thesis program leading to the Master of Science degree in Electrical and Computer Engineering requires 30 semester hours of credit. Six hours of thesis (ECE 599) and one hour of ECE seminar (ECE 580) are required. A maximum of six hours of 400-level graduate courses could be counted toward the degree requirements. With the approval of the Department, a maximum of six hours from academic units outside the ECE Department could be applied toward the degree. The degree is awarded following a comprehensive examination covering the candidate's entire program of study, including the thesis.

The non-thesis program leading to the Master of Science degree in Electrical and Computer Engineering requires 30 semester hours of credit. At least 24 hours should be in 500-level courses (excluding ECE 580), thus, a maximum of six hours of 400-level graduate courses could be counted toward the degree requirements. With the approval of the Department, a maximum of three distance education hours offered by the Department, and a maximum of six hours from academic units outside the ECE Department could be applied toward the degree.

Retention. Any graduate student, thesis or non-thesis option, whose cumulative grade point average falls below 3.00 on courses that count towards the degree will be placed on departmental academic probation. Any graduate student on academic probation whose grade point average remains below 3.0 on courses that count towards the degree for two consecutive semesters in which she or he is enrolled, excluding summer sessions, will be permanently suspended from the program, unless the department grants an exception.

Qualified individuals with exceptional credentials may apply for assistantships, fellowships, and scholarships, either at the same time they apply for admission, or at any time during the course of their studies.

Please address any correspondence to "Master of Science

Program," Department of Electrical and Computer Engineering, Southern Illinois University Carbondale, Carbondale, Illinois 62901-6603. For telephone inquiries please call 618-536-2364, and refer to the Master of Science Program. The Electrical and Computer Engineering facsimile number is 618-453-7972, and the email address is ecedept@siu.edu. The Electrical and Computer Engineering home page address is <http://engineering.siu.edu/elec/>.

ECE/LAW in Electrical and Computer Engineering/Juris Doctor

Southern Illinois University Carbondale is one of the few institutions in the country to offer a concurrent degree in Electrical and Computer Engineering and Law. Students prepared for this program are expected to possess an undergraduate degree in electrical engineering, computer engineering or a related field. Students are able to tailor their program of study to focus on legal principles and policies involving the engineering profession including patent, copyright, trademark, environmental and electronic commerce laws, federal regulation of electronic media and other engineering-related areas of law.

Students must meet the requirements of admission and be admitted separately to the Master of Science program in Electrical and Computer Engineering and the School of Law. Accepted students could complete the concurrent program in as few as three years, including summers. Law students interested in this program should consult with the School of Law Associate Dean for Academic Affairs and with the Chair of the Department of Electrical and Computer Engineering.

Thesis Option

The course of study consists of the following:

- Twenty-one hours of ECE courses, including ECE 599, Master's Thesis (six hours) and ECE 592, Special Investigations (three hours).
- Eighty-one hours of LAW courses, including nine hours from an approved list of LAW courses.

The nine hours of ECE 599 and ECE 592 are applied toward the J.D. degree, for a total of 90 hours. The nine hours of LAW courses (from the approved list of LAW courses) are applied toward the M.S. degree in ECE, for a total of 30 hours.

Non-Thesis Option

The course of study consists of the following:

- Twenty-one hours of ECE courses, including ECE 593, Advanced Topics (three hours) and ECE 592, Special Investigations (three hours).
- Eighty-one hours of LAW courses, including nine hours from an approved list of LAW courses.

Nine hours of ECE courses, including ECE 592 and ECE 593 are applied toward the J.D. degree, for a total of 90 hours. The nine hours of LAW courses (from the approved list of LAW courses) are applied toward the M.S. in ECE, for a total of 30 hours.

LAW Courses

Consult with the School of Law Associate Dean for Academic Affairs regarding the list of approved LAW courses.

Doctor of Philosophy in Electrical and Computer Engineering

Educational Objectives. The program is designed to achieve the following academic objectives: (a) to fulfill the obligation of the ECE Department to provide high quality education through the doctoral level as is mandated by the mission statement of the University; (b) to provide the students with the training necessary to successfully apply the fundamental concepts and methods of electrical and computer engineering to specific areas of research and development; (c) to provide the graduates with the ability to independently organize and conduct research in electrical and computer engineering; (d) to provide the graduates with the ability to concisely disseminate existing and new knowledge and to accurately present their research plans in writing.

Program Structure. The program offers the following areas of concentration: Biomedical, Communications, Computers, Control, Electronics, Electromagnetics, Large Scale Integration (VLSI), Networks, Optics, Power, Signal Processing.

Admission. For applicants with an M.S. degree, admission to the program requires a Master of Science degree in Electrical or Computer Engineering or a related field with a GPA of 3.25/4.0 or higher. Applications for admission must include the following: a statement of research interest, transcripts, official GRE scores, three reference letters and TOEFL/ IELTS score (where appropriate), as required by the Graduate School. Admission to the program is made by the Department Chair upon recommendation by the ECE Graduate Committee.

For direct and accelerated entry into the Ph.D. program, a Bachelor of Science degree in Electrical or Computer Engineering or a related field with a GPA of 3.2/4 or higher is required. Applications for admission must include the following: A statement of research interest, transcripts, GRE scores, three reference letters and TOEFL score, as required by the Graduate School. Admission to the program is made by the Department Chair upon recommendation by the ECE Graduate Committee.

Advisement. The student must always have an advisor while in the program. However, upon arrival, the student may be advised by the department chair. The student must select a committee consisting of three members within the semester of admission. One member will serve as the student's advisor and also chair the committee. The committee will assist the student in selecting six 500-level ECE courses that define the core and in developing a plan of study. The advisor committee members must be voting ECE faculty members and must meet the requirements of the Graduate school.

Retention. Any graduate student, thesis or non-thesis option, whose cumulative grade point average falls below 3.00 on courses that count towards the degree will be placed on departmental academic probation. Any graduate student on academic probation whose grade point average remains below 3.0 on courses that count towards the degree for two consecutive semesters in which she or he is enrolled, excluding summer sessions, will be permanently suspended from the program, unless the department grants an exception.

Curriculum. For applicants with an M.S. degree, the curriculum consists of sixty-two hours of credit beyond the M.S. degree. Eighteen hours of 500-level ECE courses, of which nine hours must be taken from the selected core, three hours of mathematics, three additional hours of mathematics or science, two hours of seminar and thirty-six hours of dissertation. Students who receive an MS from SIUC and have taken the seminar are exempt from one credit hour of seminar. The mathematics and science courses must be approved by the student's Committee. Core courses successfully completed for the M.S. degree can be used to fulfill the core requirements, but additional courses must be taken to satisfy the requirement of eighteen hours of 500-level ECE courses beyond the M.S. degree.

For direct and accelerated entry into the Ph.D. program, the curriculum consists of eighty-eight hours of credit beyond the B.S. degree. Forty-four hours of 500-level ECE courses, of which nine hours must be taken from the selected core, three hours of mathematics, three hours of mathematics or science, two hours of seminar and thirty-six hours of dissertation.

The objective of the core is to provide the candidate with the foundation necessary to engage successfully in the selected research area. Thus, the core design fulfills the research tool requirement specified in the Graduate School guidelines.

Qualifying Examinations. Upon completion of the core courses, the student may take the qualifying examination which has two components: written exam and oral exam. Prior to taking the exam, the student must form an examining committee comprised of three voting ECE faculty members or two voting ECE faculty members and the ECE chair. The written examination covers at least three major areas of ECE and consists of questions from each member of the examining committee. The oral exam, conducted by the student's examining committee, is held within two weeks of the written exam. The student should score at least 75% in each area tested and must satisfactorily answer the questions in the oral exam. If not successful, the committee may allow the student to repeat the whole or part of the examination. The qualifying examination, in whole or in part, cannot be taken more than two times. The written exam, which is administered by the ECE Graduate Affairs Committee, is offered in the second week of February and the second week of September.

Candidacy. Admission to candidacy requires: (a) successful completion of the qualifying examination (which satisfies the research tool requirement of the Graduate School) and (b) successful completion of twenty-four hours of credit (which satisfies the residency requirement of the Graduate School).

Dissertation Committee. Following the admission to candidacy the Department Chair in consultation with the student's advisor (dissertation supervisor) appoints the dissertation committee, which shall consist of five faculty members with at least one (but not more than two) outside the ECE Department. The student's dissertation supervisor shall be one of the five members and shall chair this committee. The dissertation supervisor must have Direct Dissertation status. A non-ECE faculty member with Direct Dissertation status may serve as a co-Supervisor along with a co-Supervisor who is a regular ECE faculty member with Direct Dissertation status.

Dissertation Proposal. Following the admission to candidacy and upon completion of all the coursework, the candidate will prepare and submit a formal written dissertation proposal, defining the proposed research and the proposed line of inquiry. The candidate subsequently must make an oral presentation of the dissertation proposal to the members of the dissertation committee in an open forum. A public announcement of this event must be made at least five days in advance.

Comprehensive Oral Examination. In the framework of the oral presentation of the dissertation proposal, the candidate is expected to address and respond to any question (by the members of the committee) related to material covered by all the courses taken during his doctoral studies or to the background necessary for the specific area of the proposed research. In addition, the candidate is expected to defend the research methodology and the proposed line of inquiry.

Dissertation. The Dissertation must be prepared in accordance to the "Guidelines for Dissertations, Theses and Research Papers" of the Graduate School. Dissertation approval is based on successful defense of the research performed in terms of originality, relevance and presentation (written and oral). This requires approval by at least 80% of the members of the dissertation committee.

Dissertation Defense. Upon completion of the dissertation, which must demonstrate the ability of the candidate to conduct independent research, the committee will administer the final oral examination. The objective of the final oral examination, conducted in an open forum, will be the defense of the dissertation. Upon satisfactory completion of the dissertation and the final oral examination the committee will recommend the candidate for the doctoral degree.

Technical writing and oral presentation skills are important particularly for a possible academic career. During the course of study the student will be provided with opportunities to develop these skills (by attending technical writing classes and seminars). It is desirable to assign some teaching assistant duties to the candidate to gain some teaching experiences. The dissertation committee shall evaluate the candidate's skills both in technical writing and oral presentation.

Graduation. The student must complete the curriculum with a minimum grade point average of 3.25 on courses that count towards degree. For entry with an M.S. degree, a dissertation approved by the committee must be completed within five years after entry.

For direct and accelerated entry, a dissertation approved by the committee must be completed within six years after entry.

The Department has established a timetable for advisement, qualifying examination, candidacy, dissertation committee formation, dissertation proposal, oral examination, and dissertation defense.

Courses (ECE)

Graduate work in the Department of Electrical and Computer Engineering is offered toward a concentration for the Master of Science degree in Engineering. Safety glasses are required for some of the courses in this department. Four-hundred-level

courses in this department may be taken for graduate credit but only up to 6 hours.

456-3 Embedded Control and Mechatronics. Introduction to mechatronic systems, systems modeling and simulation, sensors and actuators, real-time interfacing, DSPs and microcontrollers, analysis of sampled-data systems, z-transform, digital control design techniques, emulation methods, direct method, industrial applications. Lecture and laboratory. Prerequisite: ECE 315 and 356. Lab fee: \$20 to help defray cost of software licenses.

459-3 MEMS and Micro-Engineering. Introduction to micro-electro-mechanical systems (MEMS), manufacturing techniques, microsensors, microactuators, microelectronics and micro-controllers. Lecture and laboratory. Prerequisite: ECE 315 and ECE 356.

466-3 Linear Control Systems. (Same as ECE 566) Introduction to the structure and analysis of linear dynamical systems in time domain. Topics covered include linear algebra review, solutions of linear differential equations, state space representation, state transition matrix, and time varying systems. Introduction to fundamental mathematics of linear spaces and linear operator theory. Structural properties of linear systems such as controllability, observability, stability, realizations, and minimality. Design and synthesis of controllers and state observers for linear systems. Linear quadratic regulator theory, Kalman filter, and introduction to robust control. Prerequisites: ECE 355 and ECE 356 with a minimum grade of C.

468B-3 Digital Signal Processing. Discrete-time signals and systems: z-transform; discrete Fourier transform, fast Fourier transform algorithms; digital filter design; digital filter realizations. Lecture and laboratory. Restricted to graduate standing. Lab fee: \$20 to help defray cost of software licenses.

477-3 Fields and Waves I. Transmission-line for communications. Guided wave principles and resonators. Applications in electronics, optoelectronics and photonics. Principles of radiation. Solution techniques for Laplace's equation and one-dimensional wave equation. Prerequisite: ECE 375.

482-3 Power Converter Design and Control. (Same as ECE 582) This course covers all the steps required for designing an actual power converter or electric drive system. The power stage design considerations, gate drive circuits, isolated high voltage/current measuring circuits, and application of a Texas instrumental Digital Signal Processor (DSP) for implementing different control schemes are discussed in detail. A brief introduction about the digital control theory and implementation of digital controller transfer functions using the DSP are provided as well. Prerequisites: ECE 385, ECE 356 with a minimum grade of C. Lab fee \$65 to help defray cost of software licenses and equipment.

483-3 Electric Drive Systems. (Same as ECE 583) Course content is roughly 1/3 power electronics, 1/3 applied control and 1/3 electric machinery and focuses on analysis, stimulation, and control design of electric drive based speed, torque, and position control systems. Advanced topics depending on the semester are taught. Prerequisites: ECE 385, ECE 356 with a minimum grade of C. Lab fee \$65 to help defray cost of software licenses and equipment.

486-3 Clean Electric Energy. History and Future of the Energy

Resources and their use as a component of Electrical Systems. Energy Resources (Fossil, Nuclear, Hydro, Fuel Cell, Wind, Solar, Tidal, Waste, Bio-Energy, Oceanic, Renewable, etc.) Environmental and Economical Impacts of Various Energy Sources. Electric Energy Generating Plants. Renewable Energy. Special approval needed from the instructor.

489-3 Electric Power Distribution. (Same as ECE 589) Design of primary and secondary distribution networks. Load characteristics. Voltage regulation. Metering techniques and systems. Protection of distribution systems. Special topics related to power distribution. Prerequisite: ECE 385.

493-1 to 4 Special Topics in Electrical Engineering. Lectures on topics of special interest to students in various areas of electrical engineering. Designed to test new and experimental courses in electrical engineering. Special approval needed from the instructor.

512-3 Wireless Networks. (Same as ECE 412) Compared to infrastructure based wireless communication systems, ad hoc wireless networks present several unique advantages. Thus, it has been widely studied as an important wireless communication paradigm. This graduate level course first introduces several widely adopted wireless communication technologies and then presents the concept, structure, and principles of ad hoc wireless networks. The course also introduces the details of several popular ad hoc wireless networks including mobile ad hoc networks, delay tolerant networks, wireless sensor networks, and connected vehicle networks. Novel applications in those networks will also be introduced. The course work will include paper and literature review, presentations, assignments, and a project that will enable students to be familiar with ad hoc wireless networks. NS2 will be used for student project in this course. Students can gain experience on NS2. Lab fee \$10 to help defray cost of equipment.

513-3 Digital VLSI Design. (Same as ECE 423) Principles of the design and layout of Very Large Scale Integrated (VLSI) circuits concentrating on the CMOS technology. MOS transistor theory and the CMOS technology. Characterization and performance estimation of CMOS gates, CMOS gate and circuit design. Layout and stimulation using CAD tools. CMOS design of datapath subsystems. Design of finite state machines. Examples of CMOS system designs. Laboratory experience in CMOS VLSI design. Restricted to enrollment in ECE program. Lab fee \$35 to help defray cost of software licenses and equipment.

514-3 Design of Embedded Systems. (Same as ECE 424) Introduction of modern embedded system application, platform architecture and software development. Principles of embedded processor architecture, operating systems and networking connectivity. Design and optimize in terms of system power, security and performance. Rapid prototyping using Intel-Atom based platform. Lecture and laboratory. Lab fee \$10 to help defray cost of equipment.

515-3 Three Dimensional Integration Systems. This course introduces the design of three dimensional VLSI integration systems, including through-silicon-via (TSV) process, characterization and modeling, 3D IC systems design, mixed signal stimulation, data management, testing, process variation, thermal and reliability challenges, as well as a review of 3D system design examples. Laboratory experience in

design tools (Cadence Virtuoso and Liberate, AMS stimulator). Prerequisites: ECE 345 and ECE 423 with a grade of C or better. Restricted to enrollment in ECE program.

516-3 Implementation of VLSI Systems with HDI. (Same as ECE 426) This course is dedicated for advanced Digital VLSI architecture and system implementation for high performance and low power digital signal processing applications. Application-specific processors and architecture to support real time processing of signal processing systems will be studied. Hands-on experience of using state-of-the-art CAD tools on designing such kind of VLSI architecture and systems. Upon completion of this course students will entail large HDL-based implementation of a complete VLSI system. Prerequisite: ECE 327 with a grade of C or better. Lab fee \$35 to help defray cost of software licenses and equipment.

520-3 VLSI Design and Test Automation. (Same as ECE 425) Principles of the automated synthesis, verification, testing and layout of Very Large Scale Integrated (VLSI) circuits concentrating on the CMOS technology. Resource allocation and scheduling in high-level synthesis. Automation of the logic synthesis for combinational and sequential logic. The physical design automation cycle and CMOS technology considerations. Fault modeling and testing. Timing analysis. Laboratory experience using commercial tools for synthesis and layout. Prerequisite: ECE 329. Restricted to enrollment in ECE program. Lab fee \$30 to help defray cost of software licenses and equipment.

521-3 Fault-Tolerant Computer Design. Concepts of error detection, location and correction in digital systems. Codes for error detection and correction. Models and simulations of faults. Design of tests for combinatorial and sequential circuits. Testability. Design of digital systems with testability. Prerequisite: 423, 425. Restricted to enrollment in ECE program or consent of instructor.

522-3 VLSI Circuit Testing. Theoretical and practical aspects of production testing of VLSI circuits. Relations between physical defects and fault models. Procedures for generating test inputs. Design modifications for test application and theory of built-in self-test. Prerequisite: ECE 425 or ECE 520 with a minimum grade of C, or consent of instructor. Restricted to enrollment in ECE program. Lab fee: \$25 to help defray cost of software licenses.

523-3 Low Power VLSI Design. Source of power dissipation, technology impact on power dissipation, low power circuit techniques, energy recovery, synthesis of low power circuits, low power components. Prerequisite: ECE 423 or ECE 513 with a minimum grade of C, or consent of instructor. Restricted to enrollment in ECE program. Lab fee \$35 to help defray cost of software licenses and equipment.

524-3 Synthesis and Verification of Digital Circuits. Binary decision diagrams, finite state machines and finite automata. Design automation concepts in logic level synthesis, optimization and verification for combinational as well as sequential logic. Technology mapping. Prerequisite: ECE 425 or ECE 520 with a minimum grade of C, or consent of instructor. Lab fee \$35 to help defray cost of software licenses and equipment.

525-3 Advances in Physical Design Automation. Advances in the automation of VLSI layouts with emphasis on recent developments in deep submicron, FPGA and MCM technologies.

Floor planning, placement, routing objectives in high performance designs using deep submicron technology. Timing analysis in the presence of crosstalk. FPGA architectures and design with dynamically reconfigurable FPGAs. Physical design automation for MCMs. Prerequisite: ECE 425 or ECE 520 with a minimum grade of C, or consent of instructor. Restricted to enrollment in ECE program. Lab fee \$35 to help defray cost of software licenses and equipment.

526-3 Network Processing Systems Design. Protocol processing, packet processing algorithms, classification and forwarding, queuing theory, switching fabrics, network processors, network systems design tradeoffs. Prerequisite: 422 and 429. Restricted to enrollment in ECE program or consent of the instructor.

527-3 Integrated Interconnected Networks. (Same as ECE 427) Importance of interconnection networks and networks-on-chip (NOCs). Specifications and constraints. Topology, routing, flow control, deadlock, livelock, arbitration, allocation, performance analysis, simulation. Prerequisite: ECE 329 or equivalent. Restricted to enrollment in ECE program.

528-3 Programmable ASIC Design. (Same as ECE 428) Principles and practice of designing and implementing Application-Specific Integrated Circuits (ASIC). Field Programmable Gate Arrays (FPGA). Timing analysis, timing closure and managing difference clock domains in ASIC design. Complex arithmetic circuits. Digital signal processing (DSP) circuits. FPGA microprocessors. Lab fee: \$50 to help defray cost of equipment and consumable items.

529-3 Computer Systems Architecture. (Same as ECE 429) Advanced computer arithmetic, principles of performance evaluation, instruction set principles, pipeline considerations and instruction level parallelism, vector processors, memory hierarchy design. Restricted to enrollment in ECE program.

530-3 Engineering Data Acquisition. (Same as ENGR 530) Theory of data acquisition and measurement systems. Criteria for selection of data acquisition hardware and software, instruments, sensors and other components of scientific and engineering experimentation. Methods for sampled data acquisition, signal conditioning, interpretation, analysis and error estimation. Restricted to enrollment in ECE program. Project-based fee: \$60 to help defray cost of software licenses and equipment.

531-3 Mixed-Signal VLSI Design. Analysis and design of mixed-signal integrated circuits. Digital to analog converter (DAC). Analog to digital converter (ADC). Sigma-delta data converters. Performance analysis of signal chains containing both analog and digital signal processing functions. Prerequisite: ECE 446 with a minimum grade of C. Restricted to enrollment in ECE program. Lab fee \$60 to help defray cost of software licenses and equipment.

532-3 Advanced Microprocessor Design. Superscalar pipeline, instruction level parallelism, out-of-order execution, register renaming, instruction/data prefetching, control speculation, data speculation, load forwarding, load by-passing, VLIW. Prerequisite: 429. Restricted to enrollment in ECE program or consent of instructor. Lab fee \$20 to help defray cost of equipment

533-3 Speech Processing. (Same as BME 533) Fundamentals of speech production system, signal analysis of speech, speech

coding, linear prediction analysis, speech synthesizing, and speech recognition algorithms. Prerequisite: ECE 468B. Restricted to enrollment in ECE program or consent of instructor.

534-3 Biomedical Signal Modeling. (Same as BME 536) The nature of biomedical signals. Electricity in living tissue. Biomedical signal processing and modeling. Modeling and stimulation of biomedical systems. Prerequisite: ECE 355 with a minimum grade of C. Restricted to enrollment in ECE program or consent of instructor. Lab fee: \$20 to help defray cost of software licenses.

535-3 CMOS Radio-Frequency Integrated Circuit Design. (Same as ECE 440) Introduction of RF IC, passive RLC Networks, passive IC components, MOS Transistors, distributed systems, Smith Chart and S-Parameters, introduction to Band-width estimation, biasing and voltage reference, noise in RF IC, introduction to Amplifiers, Phase-Locked Loops and Oscillators. Lecture and laboratory. Restricted to enrollment in ECE program. Lab fee \$35 to help defray cost of software licenses and equipment.

536-3 Real-Time Embedded Systems. Introduction to real-time embedded systems. Topics covered include real-time schedulability theory with static and dynamic priority scheduling policies; concepts involved in the design, analysis and verification of real-time systems, including timing and cache analysis; introduction to sensor networks and poweraware scheduling. Prerequisites: ECE 321 and ECE 329. Restricted to enrollment in ECE program.

537-3 Integrated Photonics. Fundamentals of electromagnetic theory, waveguides, photonic structures including photonic crystals and integrated microring resonator, numerical simulations of photonic integrated circuits using the beam propagation method, finite-difference time-domain method, rate equations, and fabrication processes. Prerequisite: ECE 441. Restricted to enrollment in ECE program or consent of instructor.

538-3 Medical Instrumentation: Application and Design. (Same as ECE 438 and BME 538) Basic concept of medical instrumentation, basic sensors and principles, amplifiers, biopotential electrodes, blood pressure and sound, measurement of respiratory system, chemical biosensors, cellular measurement, nervous system measurements, magnetic resonance imaging. Prerequisite: ECE 355. Restricted to enrollment in ECE program. Project-based fee: \$45 to help defray cost of software licenses and equipment.

539-3 Diagnostic Ultrasound Physics. (Same as BME 541) Propagation of ultrasonic waves in biological tissues; principles of ultrasonic measuring and imaging instrumentation; design and use of currently available tools for performance evaluation of diagnostic instrumentation; biological effects of ultrasound. Prerequisite: Modern physics, calculus & Fourier analysis. Restricted to enrollment in ECE program or consent of instructor. Lab fee \$30 to help defray cost of software licenses and equipment.

540-3 CMOS Radio-Frequency Integrated Circuit Design II. High frequency amplifier design techniques, CMOS low noise amplifiers (LNA), mixers, oscillators, frequency synthesizers, power amplifiers, an overview of wireless architectures. Prerequisite: ECE 440 or ECE 535 or equivalent. Restricted to

enrollment in ECE program. Lab fee \$50 to help defray cost of software licenses and equipment.

541-3 Nanofabrication. Fundamentals of nanofabrication for integrated circuits, micro-electromechanical systems (MEMS), biosensors, and chemical sensors. Topics include: materials, hot processing and ion implantation, pattern transfer, thin films, and process integration. Prerequisite: PHYS 320, 328; CHEM 210; or equivalent. Restricted to enrollment in ECE program.

542-3 Photonics I. (Same as ECE 441) Ray optics, wave optics, beam optics, polarization of light, statistical optics, photons and atoms. Prerequisite: ECE 375 with a grade of C or better. Lab fee: \$50 to help defray cost of equipment and consumable items.

543-3 Advanced Analog Integrated Circuit Design. Analysis and design of CMOS analog integrated circuits. Circuit noise analysis. Low-voltage high-performance operational amplifiers. Voltage and current reference circuits. Integrated analog filter circuits. Prerequisites: ECE 446 or ECE 546, or consent of instructor. Lab fee \$35 to help defray cost of software licenses and equipment.

544-3 Photonics II. (Same as ECE 448) Fourier optics, fiber optics, electro-optics, nonlinear optical media, acousto-optics, photonic switching, optical and interconnections and optical storage. Prerequisite: ECE 441 or consent of instructor. Lab fee: \$80 to help defray cost of software licenses.

545-3 Advanced Semiconductor Devices. Technology Drivers: Moore, More Moore, and More-than-Moore. Case Study: Integrated health monitoring systems. Review of solid-state theory: electronic, magnetic, optical and thermal properties of semiconductors. Energy related devices: solid-state lighting and LEDs, single-photon emitters, OLEDs, solar cells, thermoelectric devices, piezoelectric. Energy storage and supercapacitors. Imagers and LCDs. Sensors and detectors. Thin-film transistors (TFTs). Microwave and THz devices. Prerequisites: ECE 447 or PHYS 425 or PHYS 430, or consent of instructor consent.

546-3 Analog Circuit Design. (Same as ECE 446) Analysis and design of electronic circuits, both discrete and integrated. Computer-aided circuit and analysis. Design of amplifier and filter circuits. Circuit stability analysis and frequency compensation techniques. Restricted to enrollment in ECE program. Lab fee \$10 to help defray cost of equipment.

547-3 Semiconductor Devices. (Same as ECE 447) Semiconductor industry and Moore's law. Review of quantum mechanics of atoms. From atoms to crystals: energy bands, effective mass and density-of-states. Semiconductor statistics. Carrier transport phenomena. PN junctions. Schottky junctions. Bipolar junction transistors (BJTs). MOSFETs: capacitance-voltage and current-voltage characteristics, threshold voltage, scaling and short-channel effects, SPICE models. CMOS process integration. Basic optoelectronic devices: LEDs and solar cells. Lecture and Laboratory. Prerequisite: ECE 345 or equivalent. Lab fee: \$25 to help defray cost of software licenses.

548-3 Advanced Electronic Devices. A study of techniques in fabricating microelectronic and discrete electronic devices and influences on device design. Thick-film hybrid, thin-film hybrid, monolithic bipolar, and monolithic MOS technologies will be examined. Prerequisite: ECE 345 and 447. Restricted to enrollment in ECE program.

549-3 Fiber Optic Communications. Fundamentals of step index

and graded index fiber waveguides using geometrical optics and Maxwell's equations. Other topics include design criteria, practical coupling techniques, discussion of optical sources and detectors used in light-wave communications, system examples, characterization and measurement techniques. Prerequisite: ECE 447 or 448 or consent of instructor.

550-3 Nanoelectronic Devices. Principles of semiconductor materials or devices. Nanotransistors: Charge-based devices- MOSFETs, non-ideal and quantum effects in nanoscale MOSFETs, advanced MOSFETs: trigate FETs, FinFETs, ETSOI, SiGE, Ge and III-Vs, carbon nanotubes and graphene ribbons, 2-D monolayers, nonowires, high electron mobility transistors (HEMTs), compact and SPICE models for advanced MOS devices. VLSI interconnects, parasitic elements, and reliability issues. Non-charge based devices- spinFET. Quantum devices- resonant tunnel diodes, tunnel FETs, single electron transistors (SETs). Nanomemory: EEPROM and Flash, phase change memory, electrolyte, magnetic and ferroelectric RAM, spin-torque devices, DRAM and ZRAM. Prerequisites: ECE 447 or PHYS 425 or PHYS 430 or instructor consent. Lab fee: \$25 to help defray cost of software licenses.

551-3 Probability and Stochastic Processes for Engineers. (Same as ENGR521) Axioms of probability, random variables and vectors, joint distributions, correlation, conditional statistics, sequences of random variables, stochastic convergence, central limit theorem, stochastic processes, stationarity, ergodicity, spectral analysis, and Markov processes. Restricted to graduate student status. Restricted to enrollment in ECE program. Lab fee: \$20 to help defray cost of software licenses.

552-3 Signal Detection and Estimation. Estimation theory: parameter estimation, minimum variance unbiased estimators, sufficient statistics, Cramer-Rao lower bound, best linear unbiased estimators, maximum likelihood estimators, least squares, Bayesian estimation, maximum a posteriori estimators, minimum mean square error estimators, linear minimum mean square error estimators, Wiener filtering. Detection theory: hypothesis testing, likelihood ratios, Neyman-Pearson detection, Bayesian hypothesis testing, matched filtering, multiple hypothesis testing, sequential detection, composite hypothesis testing, uniformly most powerful tests, generalized likelihood-ratio tests. Prerequisite: ECE 551. Restricted to enrollment in ECE program.

553-3 Computer Network System Architecture. (Same as ECE 422) Principles of Computer Networks. Protocols and system level implementations. Socket programming, router and switching fabric architecture, security and packet classification techniques, multimedia networking and QoS. Lab fee \$10 to help defray cost of equipment.

554-3 Spread Spectrum Communication. Concepts of spread spectrum systems, frequency hopping, and direct sequence systems. Anti-jamming performance analysis, synchronization schemes, and systems with forward error correction. Prerequisite: ECE 552. Restricted to enrollment in ECE program or consent of instructor.

555-3 Introduction to Information Theory and Channel Coding. (Same as ECE 476) Entropy and Mutual Information. Channel Capacity. Gaussian Channel. Linear Block Codes. Convolutional Codes. Advance Channel Coding Techniques. Restricted to enrollment in ECE program.

556-3 Digital Communications. Digital communication signals and systems characterization. Deterministic receiver design. Probabilistic receiver design. Error control coding. Communication over band limited channels. Prerequisite: ECE 551. Restricted to enrollment in ECE program.

557-3 Computational Electronics. (Same as ECE 457) Elements of computational science/engineering. High-performance clusters and software tools for HPCs. Essential numerical methods. Fundamental physics and modeling of charge transport phenomena. Numerical solution of carrier continuity equations and terminal currents in semiconductor devices. Numerical solution of the Schrodinger equation. Electronic bandstructure calculations using tight-binding formalism. Phonon (heat) transport and thermoelectrics. Fundamentals of optical processes. Commercial and noncommercial semiconductor device modeling tools. Prerequisite: ECE 345 or PHYS 425 or instructor consent. Lab fee: \$25 to help defray cost of software licenses.

558-3 Digital Image Processing I. (Same as ECE 458) Basic concepts, scope and examples of digital image processing, digital image fundamentals, image sampling and quantization, an image model, relationship between pixels, enhancement in the spatial domain, enhancement in the frequency domain, image segmentation, basics of color image processing. Restricted to enrollment in ECE program or special approval needed from the instructor.

560-3 Semiconductor Materials and Device Characterization. (Same as ECE 449) Materials for modern ICs: semiconductor crystals, tubular and monolayer materials, organic materials, heterostructures, wafers and notations. Nanoscale fabrication processes: IC production flow, selective doping, nanolithography, etching, contacts and interconnects, spontaneous formations and ordering of nanostructures, fabrication of MEMS/NEMS systems, IC assembly and packaging. MOS device characterization: electrical CV and IV profiling, defect characterization using DLTS, carrier mobility and lifetime measurements, optical microscopy and spectroscopy, particle beam and X-ray techniques. Reliability of devices and ICs: harsh environments, hot carriers, NBTI, electromigration, electrostatic discharge, IC power dissipation and cooling. Prerequisite: ECE 447 or ECE 423 or instructor consent.

562-3 Microwave Engineering I. (Same as ECE 479) Electromagnetic theory, analysis, design, fabrication, measurement and CAD applied to passive networks at microwave frequencies. Topics include: Transmission lines, Waveguides, impedance matching, tuning, resonators, scattering parameters, the Smith Chart. Lecture and Laboratory. Prerequisite: ECE 375. Restricted to enrollment in ECE program. Lab fee: \$100 to help defray cost of software licenses.

564-3 Optimal Control. Optimization techniques for linear and nonlinear systems. Variational calculus. Dynamic programming. Pontryagin's maximum principle. Hamilton-Jacobi theory. Linear regulator. Bang Bang control, minimum time control, singular control. Discrete variational calculus. Combined estimation and control. Computational methods in optimal control. Prerequisite: ECE 456. Restricted to enrollment in ECE program or consent of instructor.

565-3 Nonlinear Systems Analysis. Analysis and design

of nonlinear dynamical systems. Topics include: nonlinear differential equations, stability, Lyapunov stability analysis, stability of perturbed systems, linearization, and central manifold theorem. Stabilization, feedback linearization, and controller design methods such as backstepping and sliding mode control.

566-3 Linear Control Systems. (Same as ECE 466) Introduction to the structure and analysis of linear dynamical systems in time domain. Topics covered include linear algebra review, solutions of linear differential equations, state space representations, state transition matrix, and time varying systems. Introduction to fundamental mathematics of linear spaces and linear operator theory. Structural properties of linear systems such as controllability, observability, stability, realizations, and minimality. Design and synthesis of controllers and state observers for linear systems. Linear quadratic regulator theory, Kalman filter, and introduction to robust control.

567-3 Modern Biomedical Imaging. (Same as ECE 467 and BME 532) Modern biomedical imaging. Diagnostic x-ray projection imaging. Tomographic imaging. Ultrasound imaging and therapy. Magnetic resonance imaging (MRI). Signal and noise characteristics. Image quality evaluation. Three-dimensional image reconstruction algorithms. Prerequisite: ECE 355. Restricted to enrollment in ECE program or consent of instructor. Project-based fee: \$30 to help defray cost of software licenses and equipment.

568-3 Pattern Classification. Classification models, discriminant functions, decision surfaces, generalized linear discriminant functions, parameter estimation, problems of dimensionality, component analysis, Fisher discriminant analysis, hidden Markov models, nearest neighbor rules, classification trees, string matching, resampling for classifier design and evaluation, clustering algorithms, projects. Restricted to enrollment in ECE program or special approval needed from the instructor.

569-3 Biomedical Instrumentation. (Same as BME 538) Basic concept of Medical instrumentation, basic sensors and principles, amplifiers, biopotential electrodes, blood pressure and sound, measurement of respiratory system, chemical biosensors, Cellular measurements, Nervous system measurements, magnetic resonance imaging. Prerequisites: PHSL 410A or CHEM 444. Restricted to enrollment in ECE program or consent of instructor.

570-3 Principles of Communication Systems. (Same as ECE 478) Amplitude, frequency, and phase modulation. Sampling theorem. Pulse code modulation. Digital carrier systems. Optimum signal detection. Lectures and laboratory projects. Prerequisite: ECE 315 and ECE 355. Restricted to enrollment in ECE program.

571-3 Wireless and Personal Communications Systems. (Same as ECE 471) Introduction to cellular systems. Propagation modeling. Modulation techniques. Digital signaling on fading channels. Diversity and MIMO. OFDM and CDMA. Prerequisite: ECE 315 and ECE 335. Restricted to enrollment in ECE program. Lab fee: \$20 to help defray cost of software licenses.

572-3 Neural Networks. Anatomy and physiology of the cerebral cortex. Feed-forward Networks, Linear Associator, Multilayer Perceptrons. Feedback Networks, Hopfield Networks, ART. Applications to pattern recognition, robotics and

speech processing. Optical and electronic implementations. Prerequisite: MATH 305. Restricted to enrollment in ECE program or consent of instructor.

573-3 Field and Waves II. Time-harmonic electromagnetic fields in dielectric and lossy media, transmission lines, antennas and resonators. Techniques include duality, image theory, reciprocity and integral equations. Boundary value problems solved for several frequently encountered symmetries. Prerequisite: ECE 477. Restricted to enrollment in ECE program.

574-3 Nonlinear Optics. Coupled-mode-analysis applied to nonlinear wave interactions, harmonic generation, parametric amplification, backward wave amplifiers, backward oscillation in laser systems, phase conjugation and multiple-wave mixing systems, Pockel and Kerr effects, and electrooptical modulations in optical communication systems. Prerequisite: ECE 375. Restricted to enrollment in ECE program or consent of instructor.

575-3 Antennas I. (Same as ECE 472) Analysis, design, fabrication, measurement and CAD applied to basic antenna types. Fundamental parameters. Friis transmission equation. Impedance and pattern measurements. Resonant microstrip and wire antennas. Arrays and line sources. Lecture and Laboratory. Prerequisite: ECE 375. Restricted to enrollment in ECE program. Lab fee: \$120 to help defray cost of software licenses.

576-3 Numerical Electromagnetics. Numerical solution of electromagnetic problems by methods that include finite element, integral equation, moment, spectral domain and finite difference. Examination of electromagnetic problems and their solutions in current literature. Prerequisite: ECE 573. Restricted to enrollment in ECE program.

577-3 Antenna II. Analysis, design and CAD of antennas. Numerical methods. Broadband, traveling-wave, frequency independent, electrically-small, aperture and microstrip antenna types. Prerequisite: ECE 472. Restricted to enrollment in ECE program.

578-3 Digital Image Processing II. Full-color image processing, image noise and degradation models, image restoration, inverse filtering, Wiener filtering, geometric transformations, image compression models, error-free compression, lossy compression, compression standards, dilation and erosion, opening and closing operations, morphological filtering, boundary descriptors, regional descriptors, principal components, vision-based pattern recognition. Prerequisite: ECE 558. Restricted to enrollment in ECE program.

579-3 Microwave Engineering II. Analysis and design of passive and active devices at microwave frequencies. Topics include: power dividers, couplers, filters, ferrite devices, noise, noise effects in detectors, mixers, modulators, amplifier and oscillator design, and an introduction to microwave systems. Prerequisite: 479. Restricted to enrollment in ECE program.

580-1 Seminar. Study and formal presentation by students of selected research in electrical and computer engineering. Restricted to students in the graduate program in Electrical and Computer Engineering. Special approval needed from the instructor.

581-3 Wind and Solar Energy Power Systems. (Same as ECE 481) This course introduces students to wind and solar energy power systems. Planning of wind generation; design and

operation of wind generators, mechanical and electrical design, power conditioning, control and protection. Planning, operation and design of electric solar plants; power conditioning, control and protection. Restricted to enrollment in ECE program.

582-3 Power Converter Design and Control. (Same as ECE 482) This course covers all the steps required for designing an actual power converter or electric drive system. The power stage design considerations, gate drive circuits, isolated high voltage/current measuring circuits, and application of a Texas Instrument Digital Signal Processor (DSP) for implementing different control schemes are discussed in detail. A brief introduction about the digital control theory and implementation of digital controller transfer functions using the DSP are provided as well. Lab fee \$65 to help defray cost of software licenses and equipment.

583-3 Electric Drive Systems. (Same as ECE 483) Course content is roughly 1/3 power electronics, 1/3 applied control and 1/3 electric machinery and focuses on analysis, simulation, and control design of electric drive based speed, torque, and position control systems. Advanced topics depending on the semester are taught. Lab fee \$65 to help defray cost of software licenses and equipment.

584-3 Electric and Hybrid Vehicles. (Same as ECE 484) This course covers an entire range of topics related to analysis, design, control, and optimization of electric, hybrid, and plug-in hybrid power trains including automotive applications of adjustable speed motor drives, energy storage systems, and advanced power converters. Prerequisite: ECE 385. Restricted to enrollment in ECE program or consent of the instructor. Lab fee \$65 to help defray cost of software licenses and equipment.

585-3 Power Systems Stability and Control. Fundamentals of power system stability, synchronous machine modeling and simulation, transient and small signal stability, control and protection, power system stabilizers, voltage stability, voltage collapse, concepts and devices of flexible ac transmission, mid-term and long-term stability. Prerequisite: ECE 487. Restricted to enrollment in ECE program.

586-3 Computational Methods in Power Systems. The course covers advanced methods for the computation and analysis of power systems. Topics: circuit graph theory and network matrices, computation of electromagnetic transients, computation of system stability, stochastic methods in power systems, load forecasting, state estimation, unit dispatch. The course uses power system software. Lecture. Restricted to enrollment in ECE program.

587-3 Advanced Power Electronic Systems. The purpose of this course is to cover selected areas of power electronics in greater depth. The topics covered include small signal analysis of power converters, voltage- and current- mode control, embedded control of power electronic systems, soft switching techniques, power factor correctors, multi-level converters, advanced motor drives, and PWM techniques. Restricted to enrollment in ECE program. Lab fee \$65 to help defray cost of software licenses and equipment.

588-3 Power System Engineering (Same as ECE 488) The course covers topics involving the design and operation of a power system. Topics: symmetrical and unsymmetrical power system faults, power system protection design, transient stability of power generators, power system economic operation,

power system control, transient operation of transmission lines. The course uses power system software. Lecture restricted to enrollment in the ECE program.

589-3 Electric Power Distribution. (Same as ECE 489) Design of primary and secondary distribution networks. Load characteristics. Voltage regulation. Metering techniques and systems. Protecting of distribution systems. Special topics related to power distribution. Prerequisite: ECE 385 or equivalent. Restricted to enrollment in ECE program.

592-1 to 3 Special Investigations in Electrical Engineering. Individual advanced projects and problems selected by student or instructor. Restricted to graduate standing. Restricted to enrollment in ECE program or special approval needed from the instructor.

593-1 to 3 Advanced Topics in Electrical Engineering. Lectures on advanced topics of special interest to students in various areas of Electrical & Computer Engineering. This course is designed to offer and test new experimental courses in electrical engineering. **(a)** Antennas and Propagation, **(b)** ASIC Design, **(c)** Communications, **(d)** Computer Architecture, **(e)** Control Systems, **(f)** Design Automation **(g)** Digital Design **(h)** Digital Testing and Verification **(i)** electromagnetic fields and waves **(j)** Embedded Systems **(k)** Medical Imaging **(l)** Mixed-signal testing and design **(m)** nanotechnology **(n)** Network systems **(o)** photonics **(p)** Physical Design automation **(q)** Power Electronic Converters and Drive Systems **(r)** Power Quality **(s)** Power System control and protection **(t)** Renewable Energy **(u)** RF and Microwave Systems **(v)** Signal Processing **(w)** Software Engineering **(x)** Wireless Systems. Restricted to enrollment in ECE program or special approval needed from the instructor.

595-3 Communication Skills for Engineering Graduate Students. This course prepares graduate engineering students to communicate technical information to various audiences and for various purposes. Principles and strategies are applied to theses, dissertations, scholarly presentations, and other engineering documents such as lab reports, user manuals, business correspondences, job application materials, and engineering ethics. Research tools and software programs prepare students to deliver oral presentations on current engineering topics. Restricted to graduate standing. Does not count toward the hours required for graduation in the ECE program. Restricted to enrollment in ECE program.

596-1 Introduction to Biomedical Engineering. (Same as BME 596) Introduction and orientation to the biomedical engineering program. Topics to be discussed include: History and scope of the Program, curriculum, required courses, elective courses, thesis and non-thesis options, graduate committee formation, research areas, monitoring academic progress, financial assistance and discussion of BME-related topics that involve math, chemistry, biology, and engineering. Restricted to: Enrollment in BME or ECE program or instructor consent. Does not count toward the hours required for graduation.

597-1 Biomedical Research Ethics. (Same as BME 597) Series of lectures from distinguished speakers, from academia, industry and government, regarding ethical issues associated with biomedical research and development. Graded *S/U* or *DEF* only. Restricted to: Enrollment in BME or ECE program. Does not count toward the hours required for graduation in the ECE program.

599-1 to 6 Thesis.

600-1 to 24 (1 to 16 per semester) Doctoral Dissertation. Dissertation research. Hours and credit to be arranged by director of graduate studies. Graded *S/U* only. Restricted to admission to PhD program in Electrical and Computer Engineering.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Engineering

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engineering@engr.siu.edu

COLLEGE OF ENGINEERING

SIU Carbondale Faculty participating in the Engineering Science Ph.D. Program are listed below:

Civil and Environmental Engineering (CEE) Faculty:

Bravo, Rolando, Associate Professor, Ph.D., University of Houston, 1990; 1991. Surface and subsurface hydrology, hydraulics and fluid mechanics.

Chevalier, Lizette R., Professor, *Associate Dean*, Ph.D., Michigan State University, 1994; 1995. Environmental restoration of groundwater aquifers, experimental investigation of immiscible flow, and numerical modeling of subsurface transport.

DeVantier, Bruce A., Associate Professor, Ph.D., University of California-Davis, 1983; 1983. Water quality modeling, sediment transport, turbulence modeling, finite element methods.

Hsiao, J. Kent, Associate Professor, Ph.D., University of Utah—Salt Lake City, 2000; 2001. Structural earthquake engineering, structural reliability, structural design of buildings and bridges using steel, reinforced or prestressed concrete, masonry, and wood.

Kalra, Ajay, Assistant Professor, Ph.D., University of Nevada, 2011; 2015. Hydraulics and Water Resources Engineering, hydro-climatology, urban sustainability, water-energy-climate nexus, probabilistic forecasting and downscaling, surface water and groundwater interactions.

Kassimali, Aslam, Professor and *Distinguished Teacher*, Ph.D., University of Missouri, 1976; 1980. Structural engineering, nonlinear structural analysis, structural dynamics and stability.

Kolay, Prabir, Associate Professor, Ph.D., Indian Institute of Technology, IIT Bombay, 2001; 2010. Geotechnical Engineering, Soil Stabilization, Unsaturated Soil, ANN Modeling.

Kumar, Sanjeev, Professor, *Distinguished Teacher and Chair*, Ph.D., University of Missouri-Rolla, 1996; 1998. Dynamic soil-structure interaction, piles under lateral loads, settlement prediction of landfills, hydraulic conductivity of clay barriers, seismic analysis and design of landfills, ground motion amplification in soils, liquefaction of silts and sands and machine foundations.

Liang, Yanna, Associate Professor, Ph.D., Utah State University, 2006; 2007. Bioremediation of organic pollutants in subsurface and groundwater, bioenergy production from alternative sources, and biomaterial production from biological processes.

Liu Jia, Assistant Professor, Ph.D., University of Houston, 2014; 2015. Environmental Engineering, renewable energy production, microbial fuel cell, water/wastewater treatment and groundwater/soil remediation, material development for energy safety and environmental pollution detection.

Puri, Vijay K., Professor, Ph.D., University of Missouri-Rolla, 1984; 1986. Geotechnical engineering, soil dynamics, machine foundations, liquefaction of soils.

Tezcan, Jale, Associate Professor, Ph.D., Rice University,

2005; 2005. Non-linear structural behavior, neural networks In system Identification and structural control, rehabilitation, and retrofitting of structures damaged by earthquakes.

Warwick, John J., Professor and *Dean of Engineering*, Ph.D., Penn State University, 1983; 2011. Environmental engineer, surface water hydrology, surface water quality simulation.

Electrical and Computer Engineering (ECE) Faculty:

Although ECE has its own PhD program, prospective students continue to have ECE concentration available if they want to pursue their PhD degree in Engineering Science.

Ahmed, Shaikh S., Professor, Ph.D., Arizona, 2005; 2007. Nanotechnology, semiconductor devices and circuit design, simulation and characterization.

Ahmadi, Reza, Assistant Professor, Ph.D., Missouri University of Science and Technology, 2013. Power electronics & energy conversion, renewable energy harvesting, hybrid electric vehicles, smart grid.

Chen, Ying (Ada), Associate Professor, Ph.D., Duke, 2007; 2007. Biomedical imaging, image reconstruction, digital tomosynthesis, image quality analysis, signal and image processing, simulation and computing.

Gupta, Lalit, Professor, Ph.D., Southern Methodist University, 1986; 1986. Computer vision, pattern recognition, digital signal processing, neural networks.

Haniotakis, Themistoklis, Associate Professor, Ph.D., University of Athens, 1998; 1998. Digital VLSI Design and Test, RF IC Design and Test, Low Power VLSI Design, Fault-tolerant Systems.

Harackiewicz, Frances J., Professor, Ph.D., University of Massachusetts-Amherst, 1990; 1989. Electromagnetics, antenna theory and design, microwaves, microstrip phased arrays and anisotropic materials.

Hatziadoniu, Konstantine, Professor, Ph.D., West Virginia University, 1987; 1987. Power systems modeling, simulation and control, high voltage DC transmission, power electronics, power systems transient.

Kagaris, Dimitrios, Professor, Ph.D., Dartmouth College, 1994; 1995. VLSI design automation, digital circuit testing, communication networks.

Qin, Jun, Assistant Professor, Ph.D. Duke University, 2008. Medical device development, instrumentation and sensors, medical data acquisition and analysis, medical acoustics, therapeutic ultrasound, haptics.

Sayeh, Mohammad R., Professor, Ph.D., Oklahoma State University, 1985; 1986. Neural networks, optical computing, image processing, stochastic modeling, quantum electronics.

Tragoudas, Spyros, Professor and *Chair*, Ph.D., University of Texas at Dallas, 1991; 1999. Design automation for VSLI, testing and verification of digital circuiting, computer networks.

Wang, Haibo, Professor, Ph.D., University of Arizona, 2002; 2002. Mixed-signal VLSI design and testing, digital VLSI, VLSI design automation.

Weng, Ning, Associate Professor, Ph.D., University of Massachusetts at Amherst, 2005; 2005. High performance routers, network processors, system-on-a-Chip, computer architectures.

Zhou, Xiangwei, Assistant Professor, Ph.D., Georgia Institute of Technology, 2011. Wireless communications, statistical

signal processing, cross-layer optimization, cognitive radio, smart grid.

Mechanical Engineering and Energy Process (MEEP) Faculty:

Abrate, Serge, Professor, Ph.D. Purdue University, 1983; 1995. Impact, penetration, structural dynamics, composites.

Agrawal, Om, Professor, Ph.D., University of Illinois-Chicago, 1984; 1985. Computer-aided analysis and design of rigid/flexible multibody systems, numerical analysis, finite element methods, and continuum mechanics, CAD/Simulation of mechanical systems.

Chu, Tsuchin P., Professor, Ph.D., University of South Carolina, 1982; 1990. CAD/ CAM, imaging systems, mechanical vibrations, computer graphics, machine vision, optical methods in experimental mechanics and manufacturing, image processing.

Cooley, Christopher, Assistant Professor, Ph.D., Ohio State University, 2006; 2012. Dynamics, vibration, and stability of high-speed mechanical systems; gear system dynamics and vibration.

Don, Jarlen, Professor, Ph.D., Ohio State University, 1982; 1985. Materials creep and creep fatigue, surface phenomena, carbon-carbon composites, composite materials, friction materials.

Esmaceli, Asghar, Professor, Ph.D., University of Michigan, 1995; 2000. CFD, two-phase heat transfer.

Farhang, Kambiz, Professor, Ph.D., Purdue University, 1989; 1990. CAD/CAM, controls, vibrations, kinematics, dynamics, control and stability of flexible and rigid-body mechanical, electromechanical, mechanical-drive systems; manufacturing processes and process control.

Filip, Peter, Professor, Ph.D., Technical University Ostrava, Czech Republic, 1989; 2004. Friction materials, biomaterials.

Koc, Rasit, Professor and *Chair*, Ph.D., University of Missouri-Rolla, 1989; 1994. Ceramic materials, powder processing, nonstoichiometry of oxides; sintering of oxide and non-oxide ceramics, methods preparing high purity oxides from organometallics, perovskites for use as high temperature electrodes, synthesizing submicron carbide, nitride and boride powders.

Mathias, James A., Associate Professor, Ph.D., Ohio State University, 2001; 2003. Nanotechnology, microchannels, heat transfer, thermodynamics, energy utilization.

Mondal, Kanchan, Professor, Ph.D., SIU, 2001; 2006. Electrochemistry, energy from coal, catalysis, reactor systems and design.

Nsofor, Emmanuel C., Professor, Ph.D., Mississippi State University, 1993; 1999. Experimental and computational flow and heat transfer, advanced energy systems, HVAC & R, energy storage, environmental engineering, thermodynamics and combustion.

Suni, Ian I., Professor and *Director of the Materials Technology Center*, Ph.D., Harvard University, 1992; 2013. Application of electrochemistry and electrochemical engineering to technology advancement in thin film growth and dissolution, including both photovoltaic thin films and ULSI materials; electrochemical biosensors, including the use of electrochemical impedance spectroscopy (EIS) for detecting antibody-antigen recognition; and nanotechnology, including the use of nanoporous template

materials for alternative energy development and biosensing.

Wiltowski, Tomasz, Professor and *Director of the Advanced Coal and Energy Research Center*, Ph.D., Institute of Catalysis and Surface Chemistry, Cracow, Poland, 1982; 2003. Coal transformation and characterization, coal gasification, alternative energy sources, hydrogen production from coal, catalytic conversion of hydrocarbons and alcohols to hydrogen, fuel cells, nanomaterials synthesis and characterization.

Mining and Mineral Resource Engineering (MMRE) Faculty:

Chugh, Yoginder P., Professor, Ph.D., Pennsylvania State University, 1971; 1977. Coal combustion byproduct utilization and management, rock mechanics and ground control.

Harpalani, Satya, Professor, Ph.D., University of California, Berkeley, 1985; 2002. Mine ventilation, coal bed methane reservoir engineering, in situ mining, and carbon dioxide sequestration.

Mohanty, Manoj, Professor, Ph.D., Southern Illinois University Carbondale, 1997; 2000. Coal and mineral processing, experimental design and statistical analysis.

Paul, Bradley, Associate Professor, Ph.D., University of Utah, 1989; 1990. Underground mining systems and solution mining, minerals processing, hard rock and industrial minerals, geostatistics, mine environmental studies.

Spearing, A.J.S. (Sam), Associate Professor, *Emeritus*, Ph.D., Technical University of Silesia, 1993; 2007. Mine design, rock mechanics, backfill, strata control and risk assessment.

COLLEGE OF ENGINEERING—SIU Edwardsville Faculty: participating in the Engineering Science Ph.D. Program (see below)

Graduate Faculty (SIU Edwardsville):

Alkin, Oktay, Ph.D., Professor, University of Alabama, 1986.
Azambuja, Marcelo, Ph.D., Assistant Professor, University of Texas at Austin, 2009.

Bouvier, Dennis J., Ph.D., Associate Professor, University of Louisiana at Lafayette, 1994.

Celik, Serdar, Ph.D., Associate Professor, Southern Illinois University Carbondale, 2007.

Chen, Jen-Shiun, Ph.D., Professor, Ohio State University, 1983.

Chen, Xin, Ph.D., Assistant Professor, Purdue University, 2009.

Cho, Sohyung, Ph.D., Associate Professor, Pennsylvania State University, 2000.

Crk, Igor, Ph.D., Assistant Professor, University of Arizona in Tucson, 2010.

Cross, Brad, Ph.D., P.E., S.E., Professor, Johns Hopkins University, 1992.

Eneyo, Emmanuel S., Ph.D., Professor, Purdue University-West Lafayette, Indiana, 1991.

Engel, George L., D.Sc., Professor, Washington University, 1990.

Ercal, Gunes, Ph.D., Assistant Professor, University of California, Los Angeles, 2008.

Fries, Ryan, Ph.D., P.E., Associate Professor, Clemson University, 2007.

Fujinoki, Hiroshi, Ph.D., Associate Professor, University of Southern Florida, 2001.

Gordon, Chris, Ph.D., Associate Professor, Carnegie Mellon University, 2006.

Gu, Keqin, Ph.D. Professor, Georgia Institute of Technology, 1988.

Huang, Jianwei, Ph.D., Assistant Professor, Syracuse University, 2010.

Karacal, Seref C., Ph.D., Professor and *Associate Dean*, Oklahoma State University, 1991.

Ko, Hoo Sang, Ph.D., Assistant Professor, Purdue University, 2010.

Krauss, Ryan, Ph.D., Associate Professor, Georgia Institute of Technology, 2006.

Kweon, Soondo, Ph.D., Assistant Professor, University of Illinois at Urbana-Champaign, 2009.

LeAnder, Robert W., Ph.D., Associate Professor, University of Illinois at Chicago, 2002.

Lee, Heungsoon F., Ph.D., Professor, University of Michigan, 1989.

Lozowski, Andy G., Ph.D., Associate Professor, University of Louisville, 1999.

Luo, Albert, Ph.D., Professor, University of Manitoba-Winnipeg, 1996.

Mayer, Gary R., Ph.D., Assistant Professor, Arizona State University, 2009.

McKenney, Mark, Ph.D., Assistant Professor, University of Florida, 2008.

Molki, Majid, Ph.D., Professor, University of Minnesota, 1982.

Morgan, Susan, Ph.D., P.E., Professor, Clemson University, 1995.

Noble, Brad, D.Sc., Associate Professor, Washington University, 2000.

Osouli, Abdolreza (Reza), Ph.D., Assistant Professor, University of Illinois at Urbana-Champaign, 2009.

Qi, Yan, Ph.D. Assistant Professor, Louisiana State University, 2010.

Sevim, Hasan, Eng. Sc.D., Professor and *Dean*, Columbia University, New York, 1984.

Shang, Ying, D. Eng., Associate Professor, University of Notre Dame, 2006.

Smith, Scott R., Ph.D., Professor, University of Illinois, 1991.

Umbaugh, Scott E., Ph.D., Professor, University of Missouri Rolla, 1989.

Wang, Fengxia, Ph.D., Assistant Professor, Purdue University, 2008.

Weinberg, Jerry B., Ph.D., Professor, Vanderbilt University, 1996.

Werner, Anne, Ph.D., Assistant Professor, University of Illinois at Urbana-Champaign, 2004.

White, William W., Ph.D., Professor, Ohio State University, 1989.

Yan, Terry, Ph.D., Professor, University of California at Davis, 1993.

Yu, Xudong W., Ph.D., Associate Professor, Vanderbilt University, 1994.

Zhou, Jianpeng (Jim), Ph.D., P.E., Associate Professor, University of British Columbia, 2003.

The College of Engineering offers graduate programs leading to the Master of Science degree in civil engineering, electrical engineering, mechanical engineering, mining engineering, and quality engineering and management and a Doctor of Philosophy degree in engineering science and electrical and computer engineering. To support these graduate programs, the college has well equipped laboratories and computer facilities that are housed in a modern engineering complex. Additional research opportunities and funding are provided through the Advanced Coal and Energy Research Center, the Materials Technology Center, and the Office of Sponsored Projects Administration.

Doctor of Philosophy in Engineering Science

The Doctor of Philosophy degree in engineering science is available for four concentrations in four engineering departments. The areas of concentration are as follows:

Areas of Concentration

Civil and Environmental Engineering. Course offerings and research activities include water and wastewater treatments, hazardous and industrial waste treatment, geotechnical and geoenvironmental engineering, hydrologic and hydraulic engineering, sediment transport, water resources engineering, steel and concrete design, structural analysis, seismic design and analysis, and engineering materials.

Electrical and Computer Engineering. Course offerings and research activities include antennas, circuits and systems theory, electromagnetics, robust and adaptive control, robotics, embedded control, MEMS, nanoelectronics, energy conversion, power systems, power electronics, pattern recognition, image processing, biomedical engineering, neural networks, optical computing, stochastic modeling, wireless communications, detection and estimation theory, communication networks, mobile ad hoc networks, sensor networks, digital systems, programmable ASICs design, bioengineering, computer architecture, CMOS VLSI, fault tolerance, mixed signal testing and design, low power system design, hardware/software co-design, synthesis and verification of digital systems, physical design automation, and VLSI testing.

Industrial and Quality Engineering. Course offerings and research activities include quality assurance, statistical process control, six sigma, lean enterprise, service quality, reliability analysis, quality function deployment, design of experiments, project management, human safety, risk management, management of information technology resources, energy management and conservation.

Mechanical Engineering and Energy Processes. Course offerings and research activities include mechanics, mechanical systems, fractional calculus and their applications, fluid/thermal systems, material and chemical systems, air pollution control, mass and heat transfer, coal conversion, electrochemical processes, catalysis, thermal science, thermal systems design, combustion, internal combustion engines, chemical and biochemical processes, dynamics and vibrations, mechanical systems control, computational modeling and simulations, composite materials and ceramics, tribology, and micro- and nano-technology, electro-hydrodynamics, computational multiphase flow and heat transfer, microfluidics, bio-fluidics, CFD, computations of phase change phenomena and capillary driven flows.

Mining and Mineral Resources Engineering. Course offerings and research activities in this area of concentration include rock mechanics and ground control, geological engineering, mineral and coal processing, surface and underground mining systems performance optimization, mine design innovative mining systems, surface mine reclamation, in-situ mining, mine environment and ventilation, coal mine dust control, coal bed methane reservoir engineering, carbon dioxide sequestration, and coal combustion byproduct utilization and management.

Cooperative Ph.D. Program

The College of Engineering at SIU-Carbondale and SIU-Edwardsville have entered into a cooperative Ph.D. program in Engineering Science which enables students to do work on both campuses. Additional information may be obtained at <http://www.siu.edu/engineering/phd/>

Admission and Retention

Regular Admission. Admission to the doctoral program requires a master's degree in engineering or its equivalent. Applicants for the doctoral degree must meet Graduate School admission requirements and be approved by the college graduate studies committee. This program requires a \$65.00 application fee that must be submitted with the application for Admission to Graduate Study in Engineering Science.

In addition to Graduate School and other college requirements, the committee ordinarily requires a grade point average of 3.25 (4 point scale) in graduate level work. Applicants are required to submit GRE scores in support of their application for admission. Except for persons from English-speaking countries, international students are required to have a minimum TOEFL score of 550 (paper score) or 213 (computer score) or 80 (internet score) or an IELTS score of 6.5 or higher for admission.

Admission to the doctoral program also requires the identification of an initial graduate adviser for each student. For students seeking admission to the Cooperative Ph.D. Program, both an initial SIU-Edwardsville advisor along with an initial SIU-Carbondale co-advisor must be identified. This adviser will be responsible with the student for planning the student's course work. The college graduate studies committee will be kept informed of the student's program of study.

Retention is governed by the rules of the Graduate School. Students should avoid the accumulation of incomplete grades. No student with more than two incomplete grades can be awarded a graduate assistant appointment, and a student holding a graduate assistant appointment is subject to having the appointment terminated upon acquiring two or more incomplete grades.

Accelerated Entry. After at least two semesters in residence in an engineering M.S. program and after completing a minimum of 18 hours of approved coursework with a minimum GPA of 3.75, a student may request for an accelerated entry into the Ph.D. program. Such entry is permitted only to superior students who have exhibited evidence that they are prepared to begin the research activities of doctoral-level study. In addition, the student must have GRE scores that are at or above the 50th percentile for both verbal component and analytical essay component and 80th percentile for the quantitative component or a combined total percentile score of 180 or higher. In case of a

domestic student, an undergraduate GPA of 3.5 or higher is also a requirement. For an international student, a TOEFL score of 550 (paper score) or an IBT score of 80 or an IELTS score of 6.5 is an additional requirement. In exceptional cases, to substitute for the abovementioned GRE and TOEFL score requirements, the student's current faculty advisor, with the approval of the department chair, may submit a letter of recommendation for his/her student's accelerated entry into the Ph.D. program.

The student, having an accelerated entry into the Ph.D. program may not write a M.S. Thesis. In addition, 6 credit hours of course work of 500 level completed prior to his/her entry into the Ph.D. program may be counted toward the Ph.D. course requirement. In the rare event that the student getting an accelerated entry into the Ph.D. Program fails to pass the Ph.D. qualifying exam in two attempts, he/she will be allowed to complete a MS degree in his/her respective discipline.

Computer Science. Based on a memorandum of understanding signed between the College of Engineering and the College of Science, the Department of Computer Science can participate in the Engineering Science Ph.D. Program. The College of Engineering Ph.D. Committee reviews the applications and approves admissions. One of the participating Computer Science faculty serves on the Committee. An M.S. in Computer Science will be considered as a degree equivalent to an M.S. in Engineering for admission purposes. The student's Ph.D. committee will determine any makeup work that may be required.

Curriculum

A minimum of 26 semester hours of course work, including 2 hours of seminar, and 24 semester hours of dissertation research is required. The course work must be completed in 2 areas: area of concentration and program core. A student must complete a minimum of 15 hours of course work relevant to an area of concentration. The course work in the area of concentration is intended to provide depth in the student's area of research. The program core consists of 11 hours of course work. A dissertation must be completed in the student's area of research interest with the approval of the dissertation committee.

Program Core

The program core consists of 11 hours of course work: 6 hours in math, 3 hours in engineering or science and 2 hours of seminar. The math courses to choose from are: all 400 and 500, except MATH 400, 411, 412, 458, 480, 483, 511, 512, 513, and 516. The engineering courses to choose from are: ENGR 530—Engineering Data Acquisition: Theory and Practice, ENGR 540—Design of Engineering Experiments, ENGR 545—Advanced Numerical Methods in Engineering, ENGR 521—Probability and Stochastic Processes for Engineers. The science course could be any 400 or 500 level course in Computer Science, Physics, Chemistry or Geology, as approved by the student's advisor. The seminar course, ENGR 580, must be taken in two separate semesters, each time as one-hour course.

It is recommended that the seminar classes be taken after the initiation of doctoral research or after candidacy is granted. Guide for Core and Concentration Courses

- Only two 400-level courses (typically 6 hours) can be

counted towards the minimum required 26 semester hours of course work.

- Special Investigation course can be taken under ENGR 590—Special Investigations in Engineering Science, and only 3 hours can be counted towards the minimum required 26 semester hours of course work.
- Transfer credit will normally be given for some of the graduate level courses suitable to the program upon review by the college Ph.D. Committee. Proficiency examinations may be authorized by the committee for areas in which questions of transfer credit arise. No credit will be given for industrial experience. A maximum of six hours of course work can be transferred in all cases due to residency requirement, which states that every student must complete at least 24 semester hours of approved course work at SIU prior to taking the candidacy examination. Of the 24 hours of dissertation research (ENGR 600) only 6 hours can be completed before candidacy.
- A student transferring credits from a master's program must have earned those credits over and above the required course work to obtain the M.S. degree in his/her institution. Credit cannot be transferred from master degrees obtained from international institutions.

Candidacy

A Ph.D. student must satisfy all Graduate School requirements to become a candidate. Acceptance to Ph.D. candidacy is contingent upon the completion of all courses, excluding the seminar, with *A* or *B* grades and successful completion of a written and an oral examination in the student's area of concentration.

The examination in the area of concentration is organized and administered by the student's academic advisor. The candidacy examination committee consists of at least three faculty chosen by the advisor in consultation with the student. The committee has to be approved by the program director before it conducts the examination. Normally, the examination can be conducted at any time during the year when classes are in session. In the written examination, the student is tested in at least two major topics of the area of concentration with an appropriate number of questions prepared by the members of the student's candidacy committee. Each student has to score at least 70% in each major topic test in order to successfully complete the written part of the candidacy examination. If a student fails to pass any topic test of the written examination, a second chance is given for the failed topic test. If a student does not successfully complete the written examination after two attempts, he/she will not be accepted to candidacy in the engineering science Ph.D. program. A student is qualified to take the oral examination only after successfully completing the written examination.

The oral examination is conducted within two weeks of the successful completion of the written examination. In the oral examination, the student is tested again in the area of concentration by the candidacy committee members. If a student fails to pass the oral examination in the first attempt, a second chance is given. If a student does not successfully complete the oral examination after two attempts, he/she will

not be accepted to candidacy in the engineering science Ph.D. program.

After the completion of the concentration examination, copies of the graded tests, along with signoff sheets for both the written and oral examinations are submitted to the director of the Ph.D. program.

Dissertation

A dissertation must be written under the direction or co-direction of an engineering faculty member and approved by a dissertation committee consisting of a minimum of five members, one of whom must be from outside the College of Engineering. For students with a computer science background, the committee will be made up of at least six members, three cross-appointed Computer Science faculty members and three Engineering faculty members, with a chair from Computer Science and a co-chair from Engineering. For students enrolled in the cooperative Ph.D. program, the committee will be made up of at least six members, three SIUC faculty members and three SIUE faculty members, with a chair from SIUE and a co-chair from SIUC.

The dissertation adviser must be chosen by the end of the student's first academic year. The dissertation committee should be formed after successful completion of the candidacy examination. The members of this committee need not be the same as the members of the candidacy examination committee.

A dissertation research proposal must be approved by the dissertation committee. Candidates will be required to present an acceptable dissertation describing original research performed with minimal supervision.

Dissertation approval is based on a successful oral defense of the dissertation research and approval of the dissertation. This requires approval of at least 80 percent of the dissertation committee.

Graduation

1. All requirements of the Graduate School must be met.
2. A minimum of 26 hours of doctoral level course work must be completed with a minimum grade point average of 3.25.
3. An acceptable dissertation must be completed within five years after admission to candidacy or the student will be required to repeat the candidacy examinations.

Doctor of Philosophy in Electrical and Computer Engineering

See Electrical Engineering

Master of Science Programs

See Civil Engineering, Electrical Engineering, Quality Engineering and Management, Mechanical Engineering, or Mining Engineering

Courses (ENGR)

521-3 Probability and Stochastic Processes for Engineers.

(Same as ECE 551) Axioms of probability, random variables and vectors, joint distributions, correlation, conditional statistics, sequences of random variables, stochastic convergence, central limit theorem, stochastic processes, stationarity, ergodicity, spectral analysis, and Markov processes. Restricted to graduate

student status.

522-3 Intellectual Property and Commercialization. (Same as LAW 633 and BA 537) Course teaches substance and practice of commercializing context and how those laws are applied in various fields of technology. Will learn how to value intangible assets, taking into account their commercial potential and legal status. Course will consider the legal and business issues surrounding marketing of products of research. Will prepare and negotiate license agreements. Will analyze legal and business issues surrounding whether and how to enforce intellectual property rights. Content and methods of course delivery and evaluation has been approved for provision by distance education.

530-3 Engineering Data Acquisition: Theory and Practice. (Same as ECE 530) Theory of data acquisition and measurement systems. Criteria for selection of data acquisition hardware and software, instruments, sensors and other components for scientific and engineering experimentation. Methods for sampled data acquisition, signal conditioning, interpretation, analysis, and error estimation. Project-based fee: \$60 to help defray cost of software licenses and equipment.

540-3 Design of Engineering Experiments. Planning of experiments for laboratory and field studies, factorial designs, factorial designs at two levels, fractional factorial designs, response surface methods, mixture designs. Prerequisite: MNGE 417, or MATH 483, or equivalent, or consent of instructor.

545-3 Advanced Numerical Methods in Engineering. Engineering applications of linear and nonlinear equations, eigenvalue problems, interpolation and approximating functions and sets of data, numerical solutions of ordinary and partial differential equations. Prerequisite: ENGR 222 or equivalent, 351 or equivalent, and MATH 305 or consent of instructor.

580-1 Seminar. Study and presentation of research topics from students' own specialty areas within engineering and science. Graded *S/U* only. Restricted to: enrollment in the Ph.D. in engineering science program or consent of instructor.

590-1 to 3 Special Investigations in Engineering Science. Investigation of individual advanced projects and problems selected by student or instructor. Restricted to admission into Ph.D. program in engineering science.

592-1 to 3 Engineering Cooperative Education. Supervised work experience in industry, government or in a professional organization. Work must be directly related to student's program of study. Student works with on-site supervisor and faculty advisor. Activity report is required from the student and performance report is required from the employer. Enrollment requires Chair's approval. Hours do not count toward degree requirements. Mandatory Pass/Fail. Restricted to graduate standing.

593-3 Special Topics in Engineering. Studies of various special topics in the area of engineering science. Special approval needed from the instructor.

600-1 to 24 (1 to 16 per semester) Doctoral Dissertation. Dissertation research. Hours and credit to be arranged by director of graduate studies. Graded *S/U* only. Restricted to admission to Ph.D. in engineering science program.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who

are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

English

www.english.siu.edu/
gradengl@siu.edu

COLLEGE OF LIBERAL ARTS

Graduate Faculty:

Amos, Mark Addison, Associate Professor, Ph.D., Duke University, 1994; 1999.
Anthony, David J., Associate Professor, Ph.D., University of Michigan, 1998; 1998.
Appleby, Bruce C., Professor, *Emeritus*, Ph.D., University of Iowa, 1967; 1967.
Benedict, Pinckney, Professor, M.F.A., University of Iowa Writers' Workshop, 1988; 2006.
Bennett, Paula B., *Emerita*, Ph.D., Columbia University, 1970; 1991.
Blackwood, Scott, Associate Professor, M.F.A., Texas State University, 1997; 2012.
Bogumil, Mary L., Associate Professor, Ph.D., University of South Florida, 1988; 2001.
Boulukos, George E., Associate Professor, Ph.D., University of Texas at Austin, 1998; 2001.
Brunner, Edward J., Professor, Ph.D., University of Iowa, 1974; 1991.
Chandler, Anne K., Associate Professor, Ph.D., Duke University, 1995; 1995.
Cogie, Jane N., Associate Professor, *Emerita*, Ph.D., University of Iowa, 1984; 1991.
Collins, K. K., Professor and *Distinguished Teacher*, Ph.D., Vanderbilt University, 1976; 1976.
Dively, Ronda L., Associate Professor, D.A., Illinois State University, 1994; 1994.
Donow, Herbert S., *Emeritus*, Ph.D., University of Iowa, 1966; 1966.
Dougherty, Jane Elizabeth, Associate Professor and *Director of Undergraduate Studies*, Ph.D., Tufts University, 2001; 2005.
Fanning, Charles, *Emeritus*, Ph.D., University of Pennsylvania, 1972; 1993.
Fox, Robert Elliot, Professor, Ph.D., SUNY at Buffalo 1976; 1991.
Friend, Jewell, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1970; 1967.
Goodin, George V., *Emeritus*, Ph.D., University of Illinois, 1962; 1966.
Griffin, Robert P., *Emeritus*, Ph.D., University of Connecticut, 1965; 1965.
Haruf, Kent A., *Emeritus*, M.F.A., University of Iowa, 1973; 1991.
Hatton, Thomas J., *Emeritus*, Ph.D., University of Nebraska, 1966; 1965.
Hillegas, Mark, *Emeritus*, Ph.D., Columbia University, 1957; 1965.
Howell, John M., *Emeritus*, Ph.D., Tulane University, 1963; 1963.
Humphries, Michael L., Associate Professor, Ph.D., The Claremont Graduate School, 1990; 1991.

Jones, Rodney G., Professor, *Emeritus*, M.F.A., University of North Carolina at Greensboro, 1973; 1984.
Jordan, Judy L., Associate Professor, M.F.A., University of Virginia, 1995; University of Utah, 2000; 2002.
Joseph, Allison E., Associate Professor, M.F.A., Indiana University, 1992; 1994.
Klaver, Elizabeth T. Professor and *Chair*, Ph.D., University of California at Riverside, 1990; 1991.
Kvernes, David M., *Emeritus*, Ph.D., University of Minnesota, 1967; 1968.
Lamb, Mary E., Professor, *Emerita*, Ph.D., Columbia University, 1975; 1976.
Lawson, Richard A., Professor, *Emeritus*, Ph.D., Tulane University, 1966; 1963.
Light, James F., Professor, *Emeritus*, Ph.D., Syracuse University, 1953; 1979.
Little, Judy R., Professor, *Emerita*, Ph.D., University of Nebraska, 1969; 1969.
Lordan, E. Beth, Professor, M.F.A., Cornell University, 1987; 1991.
McClure, Lisa J., Associate Professor, D.A., University of Michigan, 1988; 1988.
McEathron, Scott J., Associate Professor, Ph.D., Duke University, 1993; 1993.
McGrath, Patrick, Assistant Professor, Ph.D., University of Illinois at Urbana-Champaign, 2015; 2015.
Molino, Michael R., Associate Professor, Ph.D., Marquette University, 1991; 1998.
Moss, Sidney P., *Emeritus*, Ph.D., University of Illinois, 1954; 1964.
Nelms, R. Gerald, *Emeritus*, Ph.D., Ohio State University, 1990; 1990.
Netzley, Ryan, Associate Professor and *Director of Graduate Studies*, Ph.D., Pennsylvania State University, 2002; 2005.
Peterson, Richard F., *Emeritus*, Ph.D., Kent State University, 1969; 1969.
Rudnick, Hans H., Professor, *Emeritus*, Ph.D., University of Freiburg, Germany, 1966; 1966.
Schönhorn, Manuel R., Professor, *Emeritus*, Ph.D., University of Pennsylvania, 1963; 1968.
Shapiro, Joseph, Assistant Professor, Stanford University, 2011; 2011.
Simeone, William E., Professor, *Emeritus*, Ph.D., University of Pennsylvania, 1950; 1950.
Williams, Tony, Professor, Ph.D., University of Manchester, 1973; 1984.
Zimra, Clarisse, *Emerita*, Ph.D., University of Washington, 1974; 1988.

The Department of English offers programs leading to the Master of Arts and the Doctor of Philosophy degrees with a major in English and to the Master of Fine Arts in Creative Writing. Students enrolled in a program leading to the Master of Science in Education degree in secondary education or higher education may take courses in English to satisfy requirements for the teaching specialty. Students enrolled in the Ph.D. degree in education program may take courses in English for the elective portion of the program when permitted by the specific department participating in the degree.

Admission

Students seeking admission to the graduate program in English must first be admitted by the Graduate School before they can be admitted to the Department of English.

Students seeking admission to the M.A. and Ph.D. degree programs must submit scores for the general tests of the Graduate Record Examination. MFA applicants are strongly advised to submit these scores as well. Information about admission may be obtained by calling (618-453-5321) or by writing: Director of Graduate Studies, Department of English, Southern Illinois University Carbondale, Carbondale, IL 62901-4503. E-mail: gradengl@siu.edu.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in English. Applicants must pay this fee by credit card.

Transfer Credit

Within limits imposed by the Graduate School, transfer credits will be accepted by the Department of English subject to the following restrictions.

The student must petition the Director of Graduate Studies giving the following information: the number and level of hours being submitted for credit, where and when the work was done, the grade received, and course descriptions and syllabi. As nearly as possible, the course to be transferred should be equated with a course offered by the SIU Department of English. An appropriate faculty member will recommend whether the transfer credits should be accepted and whether the course satisfies the course distribution requirements of the department. The Director of Graduate Studies will forward a recommendation to the proper authorities.

Retention

In the entire graduate program, the student may accumulate up to 3 hours of work below *B*, so long as a 3.0 M.A. or 3.25 Ph.D. average is maintained. If the student has accumulated more than 3 hours, but fewer than 10 hours, of grades below *B*, these must be replaced by an equal number of hours of *A* or *B* in addition to maintaining the required average. That is, the minimum number of semester hours of course work may be increased from 30 to a maximum of 36. A student who accumulates more than 9 hours of *C* will be dropped from the program.

A student who is granted a deferred or incomplete grade must complete the work by the end of the next term in residence. Exception to this rule will be made only in a very special case and must be made through petition to the Graduate Studies Committee. A student who has accumulated more than 6 hours of such work will not be allowed to register for more course work until the total of deferred work is reduced to not more than 3 semester hours. Deferred or incomplete work will be regarded as finished when a student has submitted all examinations, papers, etc., to the instructor. Deferred or incomplete grades in ENGL 595, 600, and 601 are not included in the above regulations.

Course Work

Students may offer work from outside the department (in a single field or in two or more related fields) toward the Master of Arts, the Master of Fine Arts, or the Ph.D. degree provided that the work does not interfere with regular requirements of the Department of English and has relevance to their program.

Master of Arts Degree

The English Department offers three areas of concentration at the master's level: 1) Literature, 2) Rhetorical and Composition, and 3) English Studies. The Master of Arts degree in English with a concentration in Literature or Composition and Rhetoric requires satisfactory completion of 30 semester hours, of which 15 must be earned in 500-level courses at Southern Illinois University Carbondale.

All students must satisfy the following requirements:

1. Core courses.

Four literature courses: two from Group I, representing two different historical periods; and two from Group II, representing two different historical periods — 12 hours.

Group I:

- (a) Old and Middle English literatures
- (b) Renaissance and 17th Century English literature
- (c) Restoration and 18th Century English literature
- (d) 19th Century English literature

Group II:

- (a) American literature before 1900
- (b) American literature since 1900
- (c) Modern British literature
- (d) Modern Continental literature

2. Concentrations. Satisfactory completion of one of the concentrations detailed below.

3. Foreign Language. This requirement may be satisfied by completing, with an average not less than B, two years of college-level work in one foreign language or FL 488, a research-tool course, or ENGL 402 plus ENGL 506 (*Beowulf*), or the equivalent. Equivalent work will be judged on an ad-hoc basis by the Director of Graduate Studies.

4. Research paper/thesis. This requirement may be satisfied either by submitting to the Director of Graduate Studies two copies of a research paper which has received a grade of not less than B in a 500-level English course (a rhetoric/composition course for students in that concentration), or by taking English 599 (3 hours) and writing an acceptable thesis.

5. Final examination. This requirement must be satisfied as specified below.

Literature Concentration

1. English 401 or 402 or 403—3 hours
2. Two additional literature courses so that a student has covered three periods in Group I and three periods in Group II—6 hours
3. Electives should include a literary criticism/theory course and may include English 599 — 6 hours
4. Satisfactory completion of a written examination over

four historical periods and a reading list. A student who fails the examination may take it a second time. A third examination may be allowed, but only by special permission of the Director of Graduate Studies. If the examination committee deems it useful an oral examination may be scheduled after the written examination to determine the grade for the examination. Any student choosing to take the MA qualifying examination must also file with the Graduate School a clean and properly formatted research paper which has earned the grade of B or better in a 500-level English course. If a student writes a thesis, the examination is oral over the thesis and course work.

Rhetoric & Composition Concentration

1. English 401 – 3 hours
2. English 596 – 3 hours
3. English 597 – 3 hours
4. One of the following (3 hours)
5. English 501, English 581, English 490, English 491, or an appropriate special topics course (this decision is to be made in consultation with the Area Head of Rhetoric & Composition).
6. English 599 (3 hours)
7. Satisfactory completion of either 1) a research portfolio and oral portfolio defense, or 2) a thesis and oral thesis defense. In either case, the student will follow specific guidelines established by the Rhetoric and Composition faculty.

English Studies Concentration

The Master of Arts degree in English with a concentration in English Studies requires satisfactory completion of 36 semester hours, of which 15 must be earned in 500-level courses at Southern Illinois University Carbondale.

All students in the English Studies concentration must satisfy the following requirements:

1. Core Courses:
At least one course from seven of the following areas:
 - (a) Language and Grammar Studies
 - (b) Old/Medieval English Literature
 - (c) Renaissance/17th Century British Literature
 - (d) Restoration/18th Century British Literature
 - (e) 19th Century British Literature
 - (f) Early American Literature
 - (g) Modern American Literature
 - (h) Modern British Literature
 - (i) Modern Continental Literature
 - (j) Composition and Rhetoric
2. Electives: 15-credit-hours, which may be taken outside the English Department.
3. Final Examination: None beyond required coursework.

Students in the English Studies concentration may request a graduate assistantship provided they receive all GA training required by the English Department. Priority, however, is given to students in the other two areas of concentration because those areas of concentration are designed to meet the specific needs of students preparing to teach at the college or university level.

Master of Fine Arts Degree

The Master of Fine Arts in Creative Writing requires satisfactory completion of 48 semester hours, of which 15 must be earned in 500-level courses at Southern Illinois University Carbondale.

All students must satisfy the following requirements:

1. Core courses:
English 592—20 hours
English 594—4 hours
2. Recommended and elective courses:
As prescribed by the creative writing faculty—15 hours
3. Candidacy Review:
In the spring semester of a student's second year in the MFA program, all students undergo a formal candidacy review. By April 10, faculty in each subspecialty (fiction and poetry) will submit to the director of creative writing a synopsis of each student's progress to date, as well as a finalized thesis committee. In those instances where the faculty finds that a student has not demonstrated satisfactory creative or professional progress and/or cannot form a thesis committee, the student will meet with the director of graduate studies and all faculty members in the student's subspecialty to determine the nature of the deficiency. The faculty may recommend to the director of graduate studies at this meeting that the student be required to complete remediation, that the student be allowed to continue in the program without sanction, or that the student be removed from the program. In the last case, the creative writing faculty will then submit a written recommendation for removal from the program to the director of graduate studies and the graduate studies committee. Within five working days of receiving this recommendation, the director of graduate studies will request a written response from the affected student. The student will have five days to respond in writing. Within five days of receiving this response, the director will convene a meeting of the graduate studies committee. Should the graduate studies committee concur with the creative writing faculty's recommendation, the student will be removed from the program. This decision will then be subject to the Graduate School's academic grievance policy detailed herein.
4. Thesis:
English 599—6 hours
5. Final oral examination over thesis and course work.

Doctor of Philosophy Degree

Students must apply formally for admission to the Doctor of Philosophy degree program, including students who have earned a master's degree at SIU. Admission to the Ph.D. program is decided by the Graduate Studies Committee, which makes its decision according to the following criteria:

1. An M.A. degree in English or its equivalent
2. Appropriate grade-point average (normally, a 3.25 is the acceptable minimum)
3. Quality of the submitted writing sample and the compatibility of a student's proposed area of focus with faculty expertise.

A full-time student holding a master's degree can complete the doctoral program in two years, though most prefer three. Students are considered Ph.D. candidates when they have (1) completed the prescribed course of study, (2) satisfied the research-tool requirements, (3) passed preliminary examinations, and (4) been recommended by the English graduate faculty. The Graduate School recognizes students as Ph.D. candidates after it receives notification that the students have passed preliminary examinations. Students must be admitted to candidacy at least 6 months prior to the final examination on the dissertation.

Accelerated Entry into the Ph.D. Degree Program

A student enrolled in the M.A. degree program may petition the Graduate Director after 2 semesters in residence for waiver of the requirement of the M.A. degree as prerequisite for admission to the doctoral program and for direct entry into the Ph.D. in accordance with the following conditions. First, the student must be an exceptional graduate student whose outstanding academic achievements must be supported by a wide range of conclusive evidence including, but not restricted to, the G.P.A., G.R.E. scores, M.A. degree research tool requirement, and evaluative letters from graduate instructors. Second, the student must present one graduate research paper of outstanding quality, or a published article of appropriate quality, or the equivalent for the departmental files. The petition shall be presented to the Graduate Studies Committee for approval. If accelerated entry is granted, the student will proceed toward the Ph.D. degree in accordance with the established rules of the department and the Graduate School. Students admitted into the Ph.D. program under the accelerated entry option will have to fulfill all M.A. degree requirements as part of the Ph.D. degree work, but will not receive the M.A. degree.

Course of Study

There is no prescribed number of hours for the Ph.D. degree in English. Required courses are as follows:

1. A pro-seminar to be taken in the first year of doctoral study;
2. Two graduate courses in literary theory or rhetorical theory or cultural studies;
3. Any courses prescribed by a student's advisory committee to ensure appropriate knowledge of a major area and 2 minor areas, normally with at least one 500-level course completed for credit, with no grade lower than *B*, in each minor area.

Research Tool Requirements

A student may satisfy the research tool requirement by fulfilling 1 of the 2 options listed below. The choice of option and languages selected must be approved by the student's advisory committee.

1. Command of one language demonstrated by examination in the Foreign Language Department. International students may specify their native language as long as they demonstrate fluency in English as well, or
2. Reading knowledge of one foreign language demonstrated by a minimum three years course work (or its equivalent) at the college level in one language with a grade no lower than a "B." Students who take research courses in any

language are required to take at least two more courses at the 300- or 400-level in the same language.

The department has expanded its Ph.D. program into interdisciplinary studies on a cooperative basis with departments that deal with one pertinent subject matter and which are interested in such interdisciplinary cooperation, e.g., the Departments of Philosophy, Foreign Languages and Literatures, History, Cinema and Photography, Speech, Theater, Sociology, etc. Permission for an interdisciplinary minor must be approved by the student's committee and the Graduate Studies Committee.

The Preliminary Exam Advisory Committee and the Program of Study Proposal

Following admission to the PhD program, and before the completion of the second year (i.e., fourth semester) in doctoral residence, a PhD student is required to form an academic advisory committee (hereafter referred to as the Preliminary Examination Committee) and to prepare a Program of Study Proposal. The Preliminary Examination Committee will consist of four members of the graduate faculty in English. The Chair of the Committee and one other member will normally represent the student's major area of interest; each of the remaining two members will normally represent one of the minor areas of interest. Within the limits of this distribution, the student may, usually upon consulting the Chair of the Preliminary Examination Committee, change the particular membership of the committee at any point. Normally the Preliminary Examination Committee will compromise the nucleus of the Dissertation Committee. As soon as the Preliminary Examination Committee is formed, it becomes the responsibility of all its members to oversee the student's program and academic progress.

If a student has not formed a preliminary exam committee by 15 April of the fourth semester in the program, then the student will undergo the formal candidacy review process detailed herein. The director of graduate studies will first consult the student in question to determine the reason for the delay in constituting the preliminary exam committee. In those instances where the director finds that the delay is the result of a simple deadline mismanagement, she will take no action. In those instances where the director finds that a student has not demonstrated satisfactory scholarly or professional progress and/or cannot form a thesis committee, the student will meet with the director of graduate studies and all faculty members in the student's area ("area" means either historical period or conceptual focus) to determine the nature of the deficiency. After the meeting, the faculty in the student's area may recommend to the director of graduate studies that the student be required to complete remediation, that the student be allowed to continue in the program without sanction, that the student be granted an extra semester to complete the program of study, or that the student be removed from the program. The faculty in the student's major area will submit a written recommendation to the director of graduate studies. If the faculty recommend removal, this recommendation will go to the graduate studies committee. Within five working days of receiving this recommendation, the director of graduate studies will request a written response from the affected student. The student will have five days to

respond in writing. Within five days of receiving this response, the director will convene a meeting of the graduate studies committee. Should the graduate studies committee concur with the faculty's recommendation, the student will be removed from the program. This decision will then be subject to the Graduate School's academic grievance policy.

Preliminary examinations

Students on a fellowship or a graduate assistantship will be expected to take preliminary examinations no later than 2 or 3 years, respectively, after receipt of their M.A. degree.

Preliminary examination covering three areas are prepared and graded by the student's advisory committee. A major examination may consist of one six-hour written exam or one take-home literature review essay. A minor area examination may consist of a three-hour written exam or a comparable take-home literature review essay. Regardless of format, all preliminary exams conclude with an oral defense.

The committee may require the student to complete further work or testing for any minor section receiving a "Low Pass" grade. The committee must require further work or testing for any entire examination that receives a "Low Pass" grade. A student who fails the preliminary examination may request to take it a second time.

Courses (ENGL)

Students desiring to enroll in 400- and 500- level courses must have been admitted to the M.A. or Ph.D. degree program in English or must have permission of the Director of Graduate Studies in English.

401-3 Modern English Grammars. Survey of the structure of English, with emphasis on phonetics and phonology, morphology, syntax, semantics, pragmatics, grammar instruction, stylistics and language variation. Specifically designed to meet the needs of prospective teachers of composition and language arts at the secondary and college levels.

402-3 Old English Language and Literature. Introduction to the language, literature and culture of Anglo-Saxon England, with emphasis on Old English heroic and elegiac poetry, exclusive of *Beowulf*.

404A-3 Medieval Allegory, History and Romance. Three popular medieval genres as represented by major texts of the early through the late Middle Ages, exclusive of Chaucer, including works such as *Dream of the Rood*, *Sir Orfeo*, *Sire Gawain* and the *Green Knight*, *Piers Plowman*, *The Book of Margery Kempe* and selections from *Lawman's Brut* and *Malory's Le Morte Darthur*.

404B-3 Medieval Lyric, Ballad and Drama. Lyric, ballad and drama from the early through the late Middle Ages, including translations of the Old English *Wife's Lament*, *Husband's Message*, *Wanderer* and *Seafarer*, as well as Middle English religious and love lyrics and the Robin Hood ballads, with special emphasis on the great plays of the fifteenth century and the rebirth of drama in the Western World.

405-3 Middle English Literature: Chaucer. Major works, including *Troilus* and *Criseyde* and selections from *The Canterbury Tales*.

412-3 English Non-Dramatic Literature: The Renaissance. Topic varies, but usually lyric poets, especially 17th-century

metaphysical poets such as Donne, Herbert and Marvell.

413-3 English Non-Dramatic Literature: The Restoration and Earlier Eighteenth Century. Major works of Dryden, Pope and Swift, and the non-dramatic specialties of Behn, Addison and Steele.

414-3 English Non-Dramatic Literature: The Later Eighteenth Century. Major poets from Thomson to Blake, and major prose writers, with emphasis on Johnson, Boswell and their circle.

421-3 English Romantic Literature. Wordsworth, Coleridge, Byron, Shelley, Keats and other writers of the era.

422-3 Victorian Poetry. Tennyson, Browning, Arnold, and other poets in England.

423-3 Modern British Poetry. Major modernists (Yeats, Eliot, Pound) with selected works of Auden, Owen, Thomas, Heaney and others.

424-3 Native American Verbal Art. (Same as ANTH 424) This class examines the oral traditions (story-telling, poetry, song, chant, etc.) of Native American Peoples. This class focuses on the ways that Native American verbal art has presented/represented by outsiders as well as on formal features and forms of Native American verbal art. Attention is paid to the place and structure of verbal art in Native societies. This class focuses on the broad spectrum of verbal art in North America.

425-3 Modern Continental Poetry. Representative poems by major 20th century poets of France, Italy, Germany, Spain, Russia, and Greece.

426-3 American Poetry to 1900. Trends and techniques in American poetry to 1900.

427-3 American Poetry from 1900 to the Present. The more important poets since 1900.

433-3 Religion and Literature. Introduces students to the study of religious meaning as it is found in literature.

436-3 Major American Writers. Significant writers from the Puritans to the present. May be repeated only if topic varies and with consent of the department.

437-3 American Literature to 1800. Representative works and authors from the period of exploration and settlement to the Federal period.

446-3 Caribbean Literature. Representative texts from drama, poetry and fiction that have shaped black diaspora aesthetics in the Caribbean, with special reference to black literature of the North American continent.

447-3 African Literature. Selected works of poetry, drama, and fiction by modern African authors.

448B-3 Irish Literature. Major works, authors, genres, periods, or movements within Irish Literature. Topics will vary (i.e., Irish Women Writers, Joyce and Yeats, The King Tales, 19th Century Irish Writers, the Celtic Twilight, Contemporary Irish Poets, etc.), providing in-depth study in particular areas within the 16 centuries of Irish Literature.

451-3 Eighteenth Century English Fiction. The novel from Defoe to Jane Austen, including works by Fielding, Richardson and others.

452-3 Nineteenth Century English Fiction. The Victorian novel from 1830, including works by the Brontes, Dickens, George Eliot, Thackeray and others.

453-3 Modern British Fiction. Major writers (including Conrad, Joyce, Woolf, and Lawrence) with selected fiction from mid-century and later.

455-3 Modern Continental Fiction. Selected major works of Europe and authors such as Mann, Silone, Camus, Kafka, Malraux, Hesse.

458-3 American Fiction to 1900. Trends and techniques in the American novel and short story.

459A-3 American Prose from 1900 to Mid-Century: The Modern Age. Representative narratives from the turn of the century to the post-World War II period.

459B-3 American Prose from Mid-Century to the Present: The Postmodern Age. Representative narratives from the post-World War II period to the present.

460-3 Elizabethan and Jacobean Drama. Elizabethan drama excluding Shakespeare: such Elizabethan playwrights as Greene, Peele, Marlowe, Dekker; and Jacobean drama: such Jacobean and Caroline playwrights as Jonson, Webster, Marston, Middleton, Beaumont and Fletcher, Massinger, Ford, Shirley.

462-3 English Restoration and 18th Century Drama. After 1660, representative types of plays from Dryden to Sheridan.

464-3 Modern British Drama. Major writers (including Shaw and Synge), with selected works of later dramatists such as Churchill and Bond.

465-3 Modern Continental Drama. The continental drama of Europe since 1870; representative plays of Scandinavia, Russia, Germany, France, Italy, Spain and Portugal.

468-3 American Drama. The rise of drama, with emphasis on the 20th century.

469-3 Contemporary Topics in Drama. Varying topics on cross-national and cross-cultural 20th-century drama with focus on theoretical issues.

471-3 Shakespeare: The Early Plays, Histories, and Comedies. Such plays as *A Midsummer Night's Dream*, *The Merchant of Venice*, *The Taming of the Shrew*, *Henry IV Part I*, *Henry V*, and *Much Ado about Nothing*. Satisfies CoLA Writing-Across-the-Curriculum requirement for English majors.

472-3 Shakespeare: The Major Tragedies, Dark Comedies and Romances. Such plays as *Hamlet*, *Macbeth*, *Othello*, *King Lear*, *Measure for Measure*, *The Winter's Tale* and *The Tempest*.

473-3 Milton. A reading of a selection of the minor poems, of *Paradise Lost*, *Paradise Regained*, *Samson Agonistes*, and the major treatises.

481-3 Young Adult Literature in a Multicultural Society. Introduction to the evaluation of literary materials for junior and senior high school, with emphasis on critical approaches and the multicultural features of schools and society. Restricted to enrollment in English degree program or consent of department.

485A-3 Teaching Writing and Language in the Secondary School. Introduction to strategies for teaching English in the secondary school with emphasis on writing and language. Ideally, course should be taken semester prior to student teaching. Restricted to: admittance to Teacher Education Program through CoEHS.

485B-3 Teaching Reading and Literature in the Secondary School. Introduction to strategies for teaching English in the secondary school with emphasis on critical reading skills and various genres of literature, including contemporary adolescent literature. Ideally, course should be taken semester prior to student teaching. Restricted to: admittance to Teacher Education Program through CoEHS.

489-3 One-to-One Teaching Practice and Theory. Perspectives on one-to-one teaching practices and collaborative theory in

hands-on Writing Center experience. Prerequisites: Minimum grade of "B" in both ENGL 101 and ENGL 102 (or their equivalent). Special approval needed from the instructor.

490-3 Expository Writing. Advanced composition with emphasis on a variety of rhetorical strategies. Prerequisite: English 290, 390, or equivalent.

491-3 Technical Writing. Introduction to technical communication across the curriculum; open to entire university community. Prerequisite: ENGL 290, 291, 391, or equivalent.

493-3 to 9 (3 per topic) Special Topics in Literature and Language. Topics vary and are announced in advance; both students and faculty suggest ideas. May be repeated as the topic varies. Prerequisites: ENGL 101 and 102 or ENGL 120H with a grade of C or better.

494-3 Culture Analysis and Cinema. Cultural studies exploring various and selected topics in European and American cinema. A \$10 screening fee is required.

495-3 A Survey of Literary Criticism. Introduction to the history of criticism and major recent schools of literary criticism and theory.

498-3 to 9 Internships. For English majors only. Student may take up to nine semester hours to receive credit for internships that may be available at SIU Press, Special Collections, University Museum, Coal Center, Writing Center, Computer Lab and other faculty or unit-sponsored projects. Prerequisite: Written approval from department & academic unit and enrollment in English degree program or consent of department.

499-1 to 6 (1 to 3, 1 to 3) Readings in Literature and Language. For English majors only. Prior written departmental approval required. May be repeated as the topic varies, up to the maximum of six semester hours. Restricted to enrollment in English degree program or consent of department.

500-3 Proseminar. Research methodology involved in writing a critical or scholarly work on literary topics for doctoral students in literature. Restricted to Enrollment in English graduate degree program.

501-3 Research in Composition. Seminar in qualitative and quantitative research methods in composition and its teaching. Restricted enrollment in English graduate degree program or consent of department.

502-3 Teaching College Composition. An introduction to methods and materials related to the teaching of basic compositional skills on the college level. This course is required of all graduate assistants who have no previous college teaching experience or no familiarity with basic research techniques.

503-2 Professional Development. Theory and practice for teaching composition in teacher-centered, workshop, discussion, and computer courses (Fall). Scholarly publication, course development, professional trends (Spring). Restricted to enrollment in English graduate degree program.

504-1 Professional Development in Creative Writing. Practicum in preparation and submission of creative work for publication, and in preparation for and application for writers' conferences, fellowships, and internships in creative writing. Restricted to and required for first-semester MFA candidates.

506-3 to 12 Old and Middle English Studies. Seminars on various topics from Old and Middle English literature. May be repeated only with different topics and the consent of the department. Restricted to enrollment in English graduate

degree program or consent of department.

510-3 to 12 Renaissance Studies. Seminars in varying topics concerned with the literature of the 16th and 17th centuries and the drama of Shakespeare. May be repeated only with different topics and the consent of the department. Restricted to enrollment in an English degree program or consent of department.

516-3 to 12 Restoration and 18th Century Studies. Seminars in varying topics concerning the literature of the period. May be repeated only with different topics and the consent of the department. Restricted to enrollment in an English degree program or consent of department.

530-3 to 12 19th Century English Literature. Seminars in various topics concerning the literature of the Romantic and Victorian periods. May be repeated only with different topics and the consent of the department. Restricted to enrollment in an English degree program or consent of department.

533-3 to 12 American Literature Before 1900. Seminars in varying topics. May be repeated only with different topics and the consent of the department. Restricted to enrollment in English graduate degree program or consent of department.

539-3 to 12 American Literature After 1900. Seminars in varying topics. May be repeated only with different topics and the consent of the department. Restricted to enrollment in English graduate degree program or consent of department.

550-3 to 12 Modern British Literature. Seminars in varying topics concerning Modern British literature. May be repeated only with different topics and the consent of the department. Restricted to enrollment in an English degree program or consent of department.

555-3 to 12 Irish Studies. Seminars on varying topics in Irish and Irish immigration studies; interdisciplinary/cultural studies approaches. May be repeated only with different topics and the consent of the department. Restricted to enrollment in English graduate degree program or consent of department.

579-3 to 12 (3 per topic) Studies in Modern Literature. May be repeated only if the topic varies, and with consent of department. Restricted to enrollment in an English degree program or consent of department.

581-3 to 9 (3 per topic) Problems in Teaching English. May be repeated only if the topic varies, and with consent of department. Restricted to enrollment in an English degree program or consent of department.

582-3 Issues in Writing Program Administration. Seminars in varying topics concerning writing program administration. May be repeated only with different topics and the consent of department.

583I-3 Internship in Writing Program Administration. An internship in WPA builds on four components: readings, activities or job tasks, written tasks, and a portfolio of artifacts and reflections representing the experience. These internships provide opportunities for interested students to implement practically what they are learning through research and reading.

588-3 Comprehensive Exam Readings. Preparatory for MA comprehensive exam. May be taken once only; grade of *S/U*. Restricted to enrollment in English program or consent of department. Restricted to MA students in English.

589-3 to 12 Readings in Literature and Language. For English

graduate students only. Prior written departmental approval required. May be repeated as the topic varies. Restricted to enrollment in an English degree program or consent of department.

591-3 to 9 Seminar in Literary Nonfiction. Critical reading and analysis of one of the major forms of literary nonfiction (biography, autobiography, popular science, the essay, literary journalism, and travel narratives). May be repeated only with different topics and the consent of the department. Special approval needed from the instructor.

592-4 Creative Writing Seminar. Advanced workshops offered in both fiction and poetry. Class content derives primarily from student's work. Genre announced in advance. May be repeated with consent of department. Restricted to enrollment in English MFA program or consent of department.

593-3 to 12 Special Topics. Seminars in varying topics concerning language and literature. May be repeated only with different topics and the consent of the department. Restricted to enrollment in an English degree program or consent of department.

594-4 to 8 Contemporary Literature Seminar. Advanced seminars offered in both contemporary poetry and contemporary fiction. Taught by creative writers and designed for students concentrating in creative writing. Restricted to enrollment in English MFA program or consent of department. May be repeated for credit with different section numbers.

595-1 to 9 Independent Readings. Preparatory for preliminary examinations for doctoral students in English. May be taken once only, grade of *S/U*, according to the result of the preliminary examination.

596-3 to 12 Language Studies. Seminars in varying topics concerning rhetoric, grammar and literacy. May be repeated only with different topics and the consent of the department. Restricted to enrollment in English graduate degree program or consent of department.

597-3 Composition Theory. Historical and analytical approaches to theories of discourse, theories of composing and theories of pedagogy. Prerequisite: 502 or equivalent.

598-3 to 12 Studies in Issues of Literary Theory. Seminars on various issues of literary theory. May be repeated only with different topics and the consent of the department. Restricted to enrollment in an English degree program or consent of department.

599-3 Thesis. For Masters' students who elect to write a thesis in lieu of one three hour graduate course. Prerequisite: successful completion of 15 hours of graduate work on the Master's degree. Special approval needed from the thesis director. Restricted to enrollment in an English degree program or consent of department.

600-1 to 36 (1 to 16 per semester) Dissertation.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Environmental Resources and Policy

<http://info.erp.siu.edu/>

enviro@siu.edu

GRADUATE SCHOOL, COLLEGES OF AGRICULTURAL SCIENCES, LIBERAL ARTS, AND SCIENCE

The Graduate School offers the Doctor of Philosophy degree in Environmental Resources and Policy. This degree provides students with an interdisciplinary education in natural resource and environmental processes with a perspective on public policy and social institutions that shape societal and individual reactions to environmental issues. The education will prepare students to work with multifaceted environmental problems and enable them to carry out interdisciplinary scientific research and be qualified for high-level administration positions in academia, government (e.g. U.S. Geological Survey, U.S. EPA, U.S. Forest Service, Illinois Dept. of Natural Resources, U.S. Department of Agriculture), and the private sector (e.g. environmental consulting firms, electric and water utilities, mining and solid waste firms). This will enable graduates to address the most compelling and daunting challenge in natural resource and environmental issues—identifying and solving problems that cross disciplinary boundaries.

The Environmental Resources and Policy Ph.D. is organized by the Departments of Geography and Environmental Resources, and Geology, and the College of Agricultural Sciences (Departments of Agribusiness Economics, Forestry, and Plant, Soil and Agricultural Systems). The School of Law and the College of Engineering also cooperate in the program.

Areas of Concentration

CLIMATOLOGY

Students who take the Climatology concentration will study the past, present, and future of Earth's atmospheric system that, in interaction with the land and the hydrosphere, generate long-term weather patterns—that is climate. Methods for investigating paleoclimates such as dendrochronology, ice and sediment cores, will be emphasized along with use of Atmospheric-Oceanic General Circulation Models for the investigation of future climate change.

EARTH AND ENVIRONMENTAL PROCESSES

Students who select this specialization combine elements of the modern, process-oriented geology curriculum (sedimentology, geomorphology, petrology, basin analysis, seismology, potential-field geophysics, organic and water geochemistry, tectonics, and paleo-environmental analysis) with allied disciplines to prepare for research into a broad range of environmental studies. This concentration emphasizes the geological process approach to analysis of such problems as flooding, earthquake hazards, land-use practices, aquifer degradation, and mine site remediation.

ECOLOGY

Students who take the ecology concentration will work with faculty from the Center for Ecology. Ecology studies the complex relationships between organisms, populations, communities, ecosystems, biomes and the biosphere, which are deeply affected

by human decisions, actions and policies—actions and policies which are themselves influenced by the environment. ER&P-ecology students will focus on the ecosystem-society relationship, such as the provision and management of ecosystem services. As the human footprint widens, and active management of ecosystems becomes more policy-relevant, understanding these connections is a vital component of training the next generation of scientists.

ENERGY AND MINERAL RESOURCES

Energy and mineral resources include hydrocarbons (oil, natural gas, coal, and their naturally-occurring and manufactured derivatives), and both metallic and non-metallic (industrial) mineral and rock deposits. This specialization comprises studies of the origins and physical occurrences of these resources, together with technologies and policies concerning their extraction and use.

ENVIRONMENTAL POLICY AND ADMINISTRATION

Making and administering environmental policy has become an exceedingly complex arena where science interacts strongly with law and the political process. Students enrolled in this concentration will examine these interactions and complexities with a focus on the socioeconomic driving forces that generate resource use and attendant environmental problems, and the political and legal frameworks through which societies make and implement public policy in the environmental field.

FORESTRY, AGRICULTURAL, AND RURAL LAND RESOURCES

Many environmental problems, challenges and policies take place on rural landscapes where forestry and agricultural land uses are intermingled with non-farm rural residents and others. Many rural land uses contribute to environmental problems and the development of environmentally benign and sustainable methods of production are goals of environmental policy. Consequently, through this concentration, students will examine the interaction among environmental quality, production, and the process and institutions of public policy.

GEOGRAPHIC INFORMATION SYSTEMS, REMOTE SENSING AND ENVIRONMENTAL MODELING

Modern environmental sciences, management and planning rely on acquisition, analysis and integration of large data bases using remote sensing, digital image processing, geographic information systems and environmental modeling. The purpose of this concentration is to enable students to develop high skills in these areas and to apply them to one or more natural resource domains (e.g., hydrogeology, forest inventory, spatial decision support systems, environmental modeling).

WATER RESOURCES

As a critical flow resource, water is of central importance to society and, through hydrologic processes, is involved in many environmental issues from water shortages in populous arid regions to ground water quality concerns associated with agri-chemical use. Through this concentration, students will examine the interaction among hydrologic processes, environmental quality, water resource use, and the processes and institutions of the private sector and public policy that govern water resources.

Environmental Resources & Policy Faculty

Please see the departmental web pages (<http://info.erp.siu.edu/facultyandstaff/default.html>) for detailed information on the research activities of individual faculty members. Please also see the departmental entries in this catalog.

Agribusiness Economics:

Altman, Ira, Renewable Energy Industries, Organizational, Rural and Regional Economics
Moon, Wanki, Consumer Economics and Food Marketing
Rendleman, Matthew, Agricultural Policy
Sanders, Dwight, Futures and options, Risk Management, Price Analysis

Forestry:

Akamani, Kofi, Human Dimensions of Natural Resource Management
Carver, Andrew, Land Use Planning, GIS
Ruffner, Charles, Forest ecology
Schoonover, Jon, Watershed Management and Hydrology
Williard, Karl, Hydrological Modeling, Watershed Management
Zaczek, James, Ecology

Geography and Environmental Resources:

Duram, Leslie, Agricultural Conservation Policy, Public Lands Policy, Organic Agriculture
Ford, Trent, Hydroclimatology, Land-atmosphere Interaction, Soil Moisture and Drought
Li, Ruopu, GIS-based Land Use Modeling, Water Resources Planning and Management, Groundwater Modeling
Remo, Jon, Hydrology, Geomorphology
Schoof, Justin, Climatology
Secchi, Silvia, ER&P Co-Director, Environmental and Energy Economics, Land Resource Development
Wang, Guangxing, Remote Sensing, Spatial Statistics and GIS

Geology:

Anderson, Ken, Organic Geochemistry
Conder, James, Seismology, Plate Boundary Processes-Geodynamics and Seismotectonics
Esling, Steven, Hydrogeology, Environmental Modeling
Ferre, Eric, Structural Geology, Rock Magnetism, Tectonics
Filiberto, Justin, Igneous and Metamorphic Petrology, Volcanology
Ishman, Scott, Marine Micropaleontology
Lefticariu, Liliana, Stable Isotope Geochemistry/Aqueous Geochemistry/Radiation chemistry.
Potter-McIntyre, Sally, Sedimentology
Rimmer, Sue, Petrology of Coal and Dispersed Organics; Coal Geology and Geochemistry

Plant, Soil and Agricultural Sciences:

Bond, Jason, Hematology and Plant Pathology
Cook, Rachel, Soil Management, Soil and Water Conservation
Ebbs, Stephen, Plant Ecophysiology, Exotoxicology, Pollutant Biogeochemistry, Phytotechnologies
Henry, Paul, Ornamental Horticulture
Lightfoot, David, Biotechnology Applications

Meksem, Khalid, Agronomy and Soil
Midden, Karen, Landscape Planning
Taylor, Bradley, Fruit Production
Walters, Alan, Horticulture

A partial listing of other SIU faculty active in environmental research and teaching:

Chevalier, Lizette, *Civil Engineering*, Physical Remediation
McCubbin, Patricia, *School of Law*, Environmental Law, Advanced Environmental Litigation, Environmental Law for Business Transactions
Chugh, Paul, *Mining Engineering*, Minerals and Residues Processing
Mohanty, Manoj, *Mining Engineering*, Coal mining and Mineral, Mineral and Coal Processing
Baer, Sara, *Plant Biology*, Ecosystem, Soil and Restoration Energy/
Gibson, David, *Plant Biology*, Plant Population and Community Ecology
Whiles, Matt, *Zoology*, Stream Ecology, Freshwater Invertebrates

Admission and Retention

Students will be admitted to the program on the basis of academic merit, statement of interest, and the availability of a willing Ph.D. advisor. Ph.D. students will be selected on a national and international competitive basis. Admissions will not be rationed by concentration.

Students must have a Master's Degree or a J. D. Students with a Bachelor's Degree may be admitted conditional upon completion of a master's degree from one of the participating departments.

Admission and financial aid are competitive on the basis of Master's-level GPA, professional work experience, and GRE scores, as well as letters of recommendation. Applicants must have a Master's-level GPA of at least 3.25, and meet one of the following:

1. a combined verbal and quantitative GRE score of at least the 50th percentile.
2. three years of successful professional experience in the environmental/natural resources field.

Highly qualified applicants will be nominated for Doctoral Fellowships and Morris Fellowships.

Students must remain in good standing with a GPA of 3.0 or higher and be making good progress toward identification and completion of a dissertation project. Students in good standing who have qualified for assistantships will be offered funding for at least three 9-month academic years.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for admission to Graduate Study in Environmental Resources & Policy. Applicants must pay this fee by credit card.

Candidacy and Dissertation

By the end of their second semester in residence, students must have chosen a concentration and formed a graduate committee to oversee their dissertation research. The graduate committee may have a maximum of three of the five members from one

department. Completion of research tools will be determined by committee. Written and oral preliminary examinations consist of two parts, one based on the program core material, and one on the student's chosen concentration. When the student has passed prelims and a dissertation proposal is accepted by the committee, students are admitted to candidacy. If prelims are not passed, they must wait a minimum of three months for the second and final attempt to pass the exam.

Candidates will be required to present an acceptable dissertation describing original research. Dissertation approval is based on a successful oral defense of the dissertation research and approval of the dissertation by the graduate committee. The dissertation research must also be presented in ERP 598.

Curriculum

Prerequisites: Students must have at least three of the seven courses listed below to be admitted and must have five upon completion of the program. It is anticipated that most students will fulfill many of the prerequisites through their previous work at the undergraduate and Master's level and will have working facility with micro-computers. For those students without adequate background, identified courses are required to provide students with the background necessary to successfully participate in the program.

Prerequisites for all Concentrations:	SIU Course if Unfulfilled:
One course in statistics	QUAN 506 or more advanced
One course in calculus	MATH 150 or more advanced
One course in chemistry	CHEM 200 or more advanced
One course in earth science	GEOG 303I OR GEOL 478 or more advanced
One course in ecology	BIOL 307 or more advanced
One course in resource economics	ABE 440, FOR 411, GEOG 422, or more advanced
One course in U.S. env. law or policy	GEOG 426, LAW 548, or more advanced

Core: 36 Credits (including 24 in ERP 600)

Concentration: 24 Credits Minimum

Total: 60 Credits

Core Curriculum for all Concentrations

Required Courses:

ERP 500	Physical and Biological Environmental Systems (3)
ERP 502	Environmental Decision Making (3)
ERP 598	Applied Environmental Resources and Policy (1 credit each year in residence)
One Methodology class listed below	
Qualitative Social Science	
SOC 512	Sociological Research Methods & Design (4)

Quantitative Social Science

ECON 567A Econometrics I (3)

QUAN 507 Multiple Regression (4)

Quantitative Biophysical Science

GEOL 513 Quantitative Methods in Earth Sciences (3)

GEOG 512 Applied Geographic Statistics (3)

ZOOL 557 Biostatistics (4)

Curriculum for Concentrations

Each concentration will require mastery of one or more research tools. Specific courses and research tools will be determined by the student and the research supervisor in consultation with the student's faculty advisory committee. The multi-disciplinary curriculum for each concentration is customized to meet the student's individual interests and career goals.

CLIMATOLOGY CONCENTRATION

The curriculum may include courses in Geography and Environmental Resources, Geology, Physics, Mathematics, and other areas relevant to the atmospheric processes.

EARTH AND ENVIRONMENTAL PROCESSES CONCENTRATION

The curriculum may include courses in geology, biological science, physical science areas other than geology, geography (GIS and cartography), environmental law, remote sensing, soil science, mining and civil engineering, computer science and statistics.

ECOLOGY CONCENTRATION

The curriculum will include PLB 589A and other courses in Zoology, Plant Biology, Forestry, Geology, Geography and Environmental Resources, and other areas relevant to ecology.

ENERGY AND MINERAL RESOURCES CONCENTRATION

The curriculum may include courses in geology, biological science, physical science areas other than geology, geography (GIS and cartography), environmental law, remote sensing, soil science, mining and civil engineering, computer science and statistics.

ENVIRONMENTAL POLICY AND ADMINISTRATION CONCENTRATION

The curriculum may include courses in environmental law, political science, geography, forestry, agribusiness economics, economics, anthropology, zoology, and statistics. Emphasis is on the processes of public policy formulation and implementation.

FORESTRY, AGRICULTURAL, AND RURAL LAND RESOURCES CONCENTRATION

The curriculum may include courses in agribusiness economics, plant, soil, and agricultural systems, animal science, geography, remote sensing and GIS, human dimensions of natural resource management, plant biology, zoology, and statistics. Emphasis is on the processes of changing land uses of rural landscapes and the implications for the environment and adjacent land uses.

GEOGRAPHIC INFORMATION SYSTEMS, REMOTE SENSING AND ENVIRONMENTAL MODELING CONCENTRATION

Students may elect from several specializations within this concentration including Geoprocessing, Biometrics, Environmental Modeling, and Geological Modeling.

WATER RESOURCES CONCENTRATION

The curriculum should include courses in Water Policy and Planning and Hydrological Sciences

Courses (ERP)

500-3 Physical and Biological Environmental Systems.

Application of principles of systems analysis, including chaos and complex adaptive systems, to Earth biogeochemical cycles (e.g. energy, carbon, water, nutrients), inter-relations among them and disruptions to them. Topical focus will vary among: the analysis of how contaminants travel, especially through ground water, and become dispersed in the environment; the origin of soils and the movement of nutrients among plants, water and soils; the origin and distribution of natural resources such as metals and fossil fuels and of natural hazards such as flooding, earthquakes, landslides and volcanism; the global carbon cycle, especially its role in global climate change.

502-3 Environmental Decision Making. (Same as ABE 502) The objective of the course is twofold. The first part of the class will be devoted to case studies of environmental decision making which use a variety of approaches to environmental policy. Topics to be covered include market-based environmental management versus regulatory approaches, climate change, conservation and floodplain management policy. The second part of the class will focus on the challenges of interdisciplinary communication and collaboration, methodological research issues and the role of integrated modeling. We will consider different issues such as qualitative and quantitative evidence, validation, and the role of values and objectivity in the scientific process.

590- 1 to 8 Readings in Environmental Resources and Policy. Readings in a specialized topic under the direction of an approved graduate faculty member. Graded *S/U* only.

598-1 Applied Environmental Resources and Policy. Invited speakers from federal, state, or local agencies; nongovernmental organizations; academic institutions; and Environmental Resources and Policy faculty will present case studies on the conduct of environmental research, the development of environmental laws and regulation, and the implementation of environmental policies. Additionally, students will present dissertation proposals and defend their dissertations. Taken for one credit each year in residence in the Environmental Resources and Policy program. Restricted to enrollment in the Environmental Resources and Policy program.

599-1 to 3 Individual Research in Environmental Resources and Policy. Individual investigation under faculty guidance in environmental resources and policy other than that for the dissertation. Only three hours may be credited toward the degree. Restricted to admission to Environmental Resources and Policy Program.

600-1 to 24 (1 to 12 hours per semester) Dissertation. Research for and writing of the doctoral dissertation. Special approval needed from the instructor.

601-1 Continuing Enrollment. For those graduate students who have not finished their degree and who are in the process of working on their dissertation. The student must have completed a minimum of 24 hours of dissertation research before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Finance

(See Business Administration for program description)

Fire Service and Homeland Security Management

<http://architecture.siu.edu/graduate/master-of-fire-service/index.php>

COLLEGE OF APPLIED SCIENCES AND ARTS

Graduate Faculty:

Kistner, Gary, Senior Lecturer, M.S., Eastern Illinois University, 1986.

Legier, John, Assistant Professor, Ph.D., Southern Illinois University, 2007.

Martin, Nancy, Assistant Professor, Ph.D., Southern Illinois University, 2006.

Ritzel, Dale, Professor, *Emeritus*, Ph.D., Southern Illinois University, 1970.

Ruffner, Charles, Associate Professor, Ph.D., Pennsylvania State University, 1999.

Graduate courses in Fire Service are offered toward the Master of Science in Fire Service and Homeland Security Management (FSHSM) degree.

Graduate work leading to a Master of Science in Fire Service and Homeland Security Management (FSHSM) is offered by the College of Applied Sciences and Arts. The program prepares its graduates with the analytic capabilities and problem-solving skills that will enable them to succeed and progress in their professional career. The 39-hour curriculum develops advanced administrative, managerial, and leadership skills critical to career advancement and promotion within these industries. The academic setting of this program will foster creative thinking and communication skills in our pursuit of excellence. The program culminates in an applied practicum as opposed to a thesis.

Criteria for Unconditional Admission

In order to be admitted to a degree program, an applicant must meet Graduate School and program admission requirements.

General requirements for domestic student admission to SIU Graduate School include: a 2.7 grade point average (on a 4.0 grading scale) on the last two years of Bachelor's degree coursework or a 3.0 grade point average on all previous graduate work. Specific requirements or equivalences for foreign student admissions and early admission consideration may be found on the SIU Graduate School website at <http://gradschool.siu.edu/admissions/index.html>.

Applicants to master's degree level study may begin the admissions process when they need no more than 32 semester hours beyond the credit shown on their transcript at the time of application to complete all requirements for the bachelor's degree.

Any applicant who has completed 12 or more semester hours of graded graduate work at an accredited U.S. educational institution, and who has a GPA of 3.00 or better on all graduate work, may be exempted from the 2.7 undergraduate grade point average requirement. Any student with fewer than 12 hours of graduate work may be admitted to the Graduate School on the basis of undergraduate GPA only.

To meet program requirements, candidates must have a

baccalaureate degree from an accredited institution or have completed all undergraduate degree requirements prior to the beginning of the classes for the term for which admission is sought. Preferred consideration is given to applicants with a bachelor's degree in Fire Science, Fire Service, Emergency Management, Emergency Medical Services (EMS) and Homeland Security, or individuals with other baccalaureate degrees with direct experience in fire fighting, EMS or related experience. All applicants will submit an essay outlining the individual's background in the field and future career goals as part of the application process.

Courses (FSM)

Courses in this program will require the purchase of textbooks and supplemental materials.

FSM 500-3 Terrorism, WMD, Contemporary Issues. This course will begin by looking at the historical evolution of terrorism and weapons of mass destruction. We will analyze theories and mitigation, preparedness, and response tactics.

FSM 501-3 Administrative Law. Administrative law is the law governing the powers, limits and operations of government administrative agencies, and the rights of individuals in dealing with those agencies. Much of this course is about two statutes and related court cases; The Administrative Procedure Act of 1946, governing federal agencies; and the Model State Administrative Procedures Act, governing Oklahoma and many other states.

FSM 502-3 Emergency Management. This course examines historical and contemporary theories, principles, and practices of Emergency Management, particularly the all-hazards approach and the related processes of mitigation, preparedness, response and recovery. Using a case study approach, the course considers the evolution of Emergency Management and its practical application with government and private-sector institutions.

FSM 503-3 Public Policy/Ethics. The focus of this course is on how public action takes place; what courses of action are available; and the implications, costs, and consequences of those actions. The Fire Service Executive of the future will require a more disciplined understanding of public policy. This course will encourage a familiarity with public issues that will be useful for the Fire Service Executives in making administrative or policy decisions.

FSM 504-3 Fiscal Financial Management. This advanced introduction to fundamentals of financial management emphasizes analysis of financial statements, organizational-departmental-divisional cash flows, taxes, the financial environment, bonds and their valuation, stocks and their valuation, and cost of capital.

FSM 505-3 Executive Leadership. This course includes leadership, multiple roles, decision making skills, influencing leaders, teaching leaders, storytelling, persuasion, succession planning, and evaluating.

FSM 506-3 Disaster Preparedness and Crisis Management. Students will receive the preparation necessary to uniquely manage and make critical decisions regarding a major incident or disaster. The course focuses on specialized decision-making processes involving analytical methods and information

management. Interaction with other agencies and effective coordination of roles and efforts within a structured command system enables the crisis manager to make decisions in an unstructured environment.

FSM 507-3 Public Management. The purpose of the course is to provide a survey of the theory and practice of management in public sector organizations. Emphasis will be given to a comparison of management in the public and private sector, management functions, and the context in which the public manager must perform the functions. Students must complete pre-class, in-class, and post-class assignments.

FSM 508-3 Critical Issues in Homeland Security. This course examines the evolving nature of the Homeland Security enterprise by examining a number of contemporary topical issues and their immediate and long-term impact on Homeland Security policies and practices. Particular attention is paid to the role of the media, law, governmental and non-governmental organizations, and political entities at the federal, state, and local levels in determining and shaping Homeland Security policy/practice.

FSM 509-3 Strategic Planning. This course examines and defines the steps, concepts, theory, and value of comprehensive strategic planning. Students will participate in the formulation, financial development, operational management, and evaluation of currently utilized strategic plans and take part in the outline and design of a mock strategic plan.

FSM 510-3 Dispute Resolution/Mediation/Negotiation. This course is about labor relations and employment disputes in the public sector and the various methods for resolving labor and personnel conflicts. Collective bargaining, arbitration, mediation, and other alternative dispute resolution methods will be applied to cases and simulation exercises relevant to government employees.

FSM 511-3 Critical Thinking and Decision Making. This course is an examination of knowledge and research as they pertain to public safety. Exploration of the relationship between creative and critical thinking, analysis of scientific methodology and logic, language and interpretation and their influence on public safety organizations.

FSM 512-3 Practicum. Under the supervision and direction of a member of the faculty, students will undertake a project involving substantive participation in managing a major simulation, exercise, or drill involving multiple agencies and institutions. Student involvement will include planning, designing, developing, conducting, and evaluating the simulation or drill. Requires the approval of the Director of Graduate Studies for FSM.

FSM 513-3 Organizational Leadership. This is the third course in the series of Leadership and Management. This course will provide the participant with a deeper understanding of knowledge, skills, and abilities for effective organizational leadership. Prerequisite: FSM 405.

FSM 514-3 Ethics and the Challenge of Leadership. This is the final course in the series of Leadership and Management. This course will provide the participant with a deeper understanding of personal and organizational ethics and the challenge of leadership. Prerequisite: FSM 513.

FSM 601-1 Continuing Enrollment. For graduate students who have not finished their degree program and who are in the

process of working on their thesis, research paper, or capstone project course (FSM 512). Concurrent enrollment in any other course is not permitted. Graded S/U or DEF only. .

Food and Nutrition

COLLEGE OF AGRICULTURAL SCIENCES

Graduate Faculty:

Appgar, Gary A., Associate Professor, Ph.D., Virginia Polytechnic Institute, 1994; 1998. Monogastric nutrition, swine production.

Ashraf, Hea-Ran Lee, Professor, *Emerita*, Ph.D., Iowa State University, 1979; 1980.

Banz, William J., Professor and *Chair*, Ph.D., University of Tennessee, 1995; 1995. Human nutrition, nutritional physiology.

Davis, Jeremy., Assistant Professor, Ph.D., Iowa State, 2008; 2008. Molecular nutrition and physiology.

Endres, Jeannette M., Professor, *Emerita*, Ph.D., St. Louis University, 1972; 1975.

Gill, Lynn T., Instructor, M.S., Southern Illinois University Carbondale, 1996. Medical nutrition therapy.

Girard, T.C., Associate Professor, *Emerita*, M.S., University of Wisconsin-Stout, 1992; 1993.

Green, Brenda L., Instructor, R.D., M.S., Southern Illinois University Carbondale, 2000. Community Nutrition.

Jones, Karen L., Professor, Ph.D., Texas A&M, 1999; 1999. Animal biotechnology, genetics reproductive physiology.

Roth, Sara Long, Professor, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1991; 1990. Medical nutrition therapy, nutrition education.

Smith, Sylvia F., Associate Professor, Ph.D., University of Tennessee 2007; 2007. Food Service Management, Culinary Tourism.

Welch, Patricia, Professor, *Emerita*, Ph.D., Southern Illinois University, 1982.

The Department of Animal Science, Food and Nutrition offers a Master of Science degree in Food and Nutrition with three concentration options: *community nutrition*, *hospitality and tourism administration*, and *nutritional sciences*. For program details not included in this description, prospective students may visit <http://www.coas.siu.edu>.

This program requires a nonrefundable \$50.00 application fee that must be submitted with the application for Admissions to Graduate Study in Animal Science, Food and Nutrition. Applicants may pay this fee by credit card if applying electronically. Applicants submitting a paper application must pay by personal check, cashier's check, or money order made out to SIU, and payable to a U.S. Bank.

Community Nutrition Concentration

The *community nutrition* curriculum incorporates the public health nutrition knowledge and skills criteria of the Association of Graduate Programs in Public Health Nutrition, Inc. In addition to master's degree work, students complete an accredited dietetic internship that qualifies them to take the registration examination for dietitians. The Accreditation Council for Education in Nutrition and Dietetics (ACEND) is a specialized accrediting body recognized by the United States Department of Education and the Council for Higher Education Accreditation. The Dietetic Internship program at SIU has been granted accreditation through 2020 by ACEND of the Academy of Nutrition and Dietetics. In addition to admission

requirements below, students need a Verification Statement for having completed a Didactic Program in Dietetics issued by a ACEND-accredited program director.

Admission

Applicants must meet the following criteria to be considered for admission to the program. Everyone, United States citizens and non-citizens alike, must complete a Didactic Program in Dietetics (DPD) accredited by ACEND. ACEND establishes and enforces "Eligibility Requirements and Accreditation Standards" for nutrition/dietetics education. It accredits education programs (including bachelor's and graduate level *Didactic Programs in Dietetics*) that prepare students for careers as "Registered Dietitians". More information about ACEND is available online at <http://www.eatright.org/acend>.

1. A baccalaureate degree from a regionally accredited college or university (completed within the last ten years)
2. Completion of a Didactic Program in Dietetics (DPD) as accredited by the Accreditation Council for Education in Nutrition and Dietetics. Students should supply appropriate documentation from their DPD Directors that is to be submitted with their application.
3. A grade point average of 3.0 or higher (where 4.0 = A) is recommended.
4. The Graduate Record Exam (GRE) is required for all applicants.
5. Desire to complete a Master of Science degree in Food and Nutrition with a concentration in community nutrition combined with a 7 and 1/2 month dietetic internship with community nutrition emphasis.
6. International students who have not completed a Didactic Program in Dietetics should review the "International Fact Sheet" on the web at <http://www.eatright.org/ACEND/content.aspx?id=7979> This is a 10-page document that answers many questions about education and credentialing requirements for *registered dietitians* and *dietetic technicians registered* in the United States
7. DICAS. Applicants to SIU combined MS/DI program must submit their application through the Dietetic Internship Centralized Application System at <https://portal.dicas.org/>.
8. **D&D Matching.** Applicants to Dietetic Internships (DI) must register for matching with D&D Digital to create/modify their prioritized list of dietetic internships for computerized matching at: <http://www.dnddigital.com/>. There is a \$50.00 registration fee for matching that is due with prioritized program rankings. **SIU's Match Number is 438.** SIU matches only during the spring. Students who match with SIU through the spring matching process are enrolled in SIU's program in August (fall semester).

Program Completion Requirements

Unless otherwise stated, policies of the University and Graduate School shall establish the minimum requirements for retention in and graduation from the program. This includes a minimum grade point average for graduation of 3.0 (4.0 point scale).

The *Community Nutrition* concentration requires 39-41 credit hours from the following: FN 540, FN 574, FN 585, WED 561, FN 530, HED 493, HED 483 or HED 500, QUAN 506, FN

581, (FN 599, FN 593 and/or electives), FN 580A, FN 580B, FN 580C. The thesis option requires a committee composed of at least 2 program faculty members and one faculty member from outside of department. The research paper option will require a committee composed of at least 3 faculty members and an additional 3 credits of elective coursework. The Master's degree candidates in the thesis or research paper options must pass an oral examination conducted by their committee. The professional track option will require an additional 6 credits of elective coursework.

Hospitality and Tourism Administration Concentration

Students applying to the *hospitality and tourism administration* concentration are expected to have an undergraduate degree in hospitality and tourism, business, or closely related field. Students are also expected to have strong academic, analytical, and communication skills. Students applying to the *hospitality and tourism administration* concentration without hospitality and tourism degree must pass a comprehensive exam or take three 400-level foundation courses related to their chosen career path.

Admission

Admission is competitive and requires a bachelor's degree with a Minimum 2.75 GPA, GRE, GMAT, or MAT, three letters of recommendation, and a personal statement. Selection for the program is recommendation by committee and Department Chair to the Graduate School Admissions Office for final evaluation and approval.

Program Completion Requirements

Unless otherwise stated, the policies of the University and of the Graduate School shall establish the minimum requirements for retention in the graduation from the program. This includes a minimum grade point average for graduation of 3.0 (4.0 point scale).

The *hospitality and tourism administration* concentration requires 31 credit hours from the following: FN 521, FN 500, QUAN 506, FN 531, FN 535, FN 561, and either FN 599 or FN 593. The graduate committee will assist with the selection of an additional six credit hours of graduate coursework appropriate for their field of study. This concentration requires a minimum of 36 credit hours to graduate. The graduate student's committee will be composed of at least two departmental faculty members and one faculty member from outside of department. Master's degree candidates must pass a comprehensive oral examination conducted by their committee, covering all graduate work including their thesis or research paper.

Nutritional Sciences Concentration

Students applying to the *nutritional sciences* concentration are expected to have an undergraduate degree in biological sciences, such as nutrition, physiology, zoology, or a related field. Students are also expected to have strong academic and analytical skills.

Admission

A grade point average of 3.0 or higher (4.0 = A) is recommended for program entrance. The Graduate Record Exam (GRE) is required for all applicants. Students should submit a statement of career goals and interest in completing the master's degree, as well as 3 letters of recommendation from former professors

or employers.

Program Completion Requirements

Unless otherwise stated, the policies of the University and of the Graduate School shall establish the minimum requirements for retention in and graduation from the program. This includes a minimum grade point average for graduation of 3.0 (4.0 point scale). The *nutritional sciences* concentration requires 12 to 16 credit hours from the following: FN 581, QUAN 506, QUAN 508 or WED 561, FN 599, or FN 593. The graduate committee will assist with the selection of an additional 14 to 18 credit hours of graduate coursework appropriate for their concentration. This concentration requires a minimum of 32 credit hours to graduate. The graduate student's committee will be composed of at least two departmental faculty members and one faculty member from outside of department. Master's degree candidates must pass a comprehensive oral examination conducted by their committee, covering all graduate work including their thesis or research paper.

Courses (FN)

Food and Nutrition is a program within the Department of Animal Science, Food and Nutrition.

515-3 Energy and Protein Utilization. (Same as ANS 515) Energy and protein utilization including digestion, absorption, and metabolism as related to mammalian physiology. Prerequisite: course in organic chemistry.

516-3 Minerals and Vitamins. (Same as ANS 516) Basic and applied principles of mineral and vitamin metabolism. Emphasis on metabolic functions, reaction mechanisms and interrelationships. Prerequisite: course in organic chemistry.

521-3 to 9 (3 per topic) Readings in Hospitality and Tourism. Advanced seminar class and nine-year historical literature review of issues affecting the hospitality and tourism industry. Sections (a) through (c) may be taken only once each. **(a)** 7-9 year literature review, **(b)** 4-6 year literature review, **(c)** current to 3 year literature review.

530-3 Advanced Nutritional Assessment and Education. Community assessment methods, specifications or particular tools used and how these tools can be applied to particular conditions of concern in community nutrition. The methods of education for individuals and populations using dietary, biochemical, anthropometrics and physical assessment data will be taught.

531-3 Hospitality Managerial Accounting. Theory and practice of managerial accounting techniques in the hospitality industry.

535-3 Advanced Hospitality Marketing Management. Analysis of marketing processes within hospitality, tourism and related organizations. Focus is on design and implementation of marketing research and analysis, as well as creation of the strategic marketing plan.

540-3 Nutrition Policy, Programs and Services. The study of policies, programs and services concerned with prevention and treatment of nutrition problems in the population.

545-3 Economics of Sustainable Tourism Development. Development of sustainable tourism destinations will be examined. Introduction to research methods involved in conducting economic impact studies, feasibility studies and

conversion studies.

551-3 Strategic Destination Management. Responsibilities of destination management organizations from an international perspective will be examined. Primary focus is destination product development and management. Destination competitiveness and marketing, specifically branding and positioning will also be discussed.

560-3 Advanced Food Service Management. Course will provide opportunities in food service facility management to demonstrate leadership, financial management skills, food safety initiatives, contingency planning, and marketing techniques. Topics include sustainable food service practices, human resource management, culinary techniques, HACCP planning and theories. Graduate students will experience a supervisory role while managing undergraduate students at food service facilities.

561-3 Service Organization and Management. Covers topics such as motivation, group dynamics, leadership, organization structure, decision making, conflict resolution, and Organizational Development. Focus is on strategic leadership to prepare individuals and organizations to excel within a changing environmental landscape toward delivery of a quality service relationship.

565-3 Advanced Convention Management and Service. Strategic relationships between meeting planner, client, facility and suppliers will be examined. Focus will be on a practical approach to convention planning and management. Students will be required to participate in planning as well as attending regional meetings.

574-3 Advanced Medical Nutrition Therapy. In-depth study of the application of nutrition to the management of disease states with emphasis on current treatment and complex metabolic abnormalities. Prerequisite: HND 470.

580-9 (3,3,3) Nutrition Practicum in the Community. Designed to provide practicum experiences in dietetics for students completing the Master's in Food and Nutrition and includes (a) clinical rotation, (b) management rotation, (c) public health nutrition rotation. Prerequisite: FN 585. Special approval needed from the instructor.

581-1 to 2 (1,1) Graduate Seminar in Community Nutrition. A discussion of current topics and literature in community nutrition and community nutrition programs. Provides a forum for student and faculty presentation, and review of current research efforts. Encourages integration of the knowledge gained from the didactic and experiential learning prior to food service management, medical nutrition therapy, and community nutrition practicum experiences. Maximum of one hour per semester.

585-3 Advanced Community Nutrition. A presentation and examination of issues and programs in food and nutrition programs. Elements including the organization and management of quality nutrition services for the prevention of disease and promotion of health will be identified and applied to community programs.

590-1 to 3 Reading in Food and Nutrition. Individual readings in food and nutrition under graduate faculty guidance. Special approval needed from the instructor.

593-1 to 3 Individual Research. Investigation of a problem in food and nutrition under the supervision of an approved graduate faculty member. Graded *S/U* only.

599-1 to 6 Thesis. Credit is given for a Master's thesis when it

is accepted and approved by the thesis committee. Graded *S/U* only.

601-1 Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Courses (HND)

Human Nutrition and Dietetic

410-3 Nutrition Education. Principles, techniques and evaluation methods necessary to incorporate nutrition into the educational curriculum of schools, hospitals, out-patient clinics, and health agencies. Prerequisite: 321.

420-3 Recent Developments in Nutrition. Critical study of current scientific literature in nutrition. Prerequisite: 320.

425-3 Biochemical Aspects in Nutrition. (Same as ANS 425) The interrelationship of cell physiology, metabolism and nutrition as related to energy and nutrient utilization, including host needs and biochemical disorders and diseases requiring specific nutritional considerations. Prerequisite: ANS 215 or HND 320 CHEM 140B, PHSL 201 and 208.

445-3 Nutrition for Sport and Exercise. This course presents the metabolic and physiologic basis for macronutrient and micronutrient requirements during training, competition/performance, and recovery. The course begins with a brief overview of nutrition and exercise metabolism, followed by examination of nutritional requirements for sport and exercise, and concluding with a discussion of the practical aspects of nutrition related to athletes and exercise enthusiasts.

461-3 Service Organization and Management. (Same as HTA 461) Managerial aspects of the hospitality industry as related to provision of quality service. Organizational structures, management techniques, decision-making abilities, ethics, leadership and human resource issues are examined. Prerequisite: HTA 202, HTA 380 with a grade of C or better. Restricted to junior standing or consent.

470-5 Medical Nutrition. Study of pathophysiology and principles of medical nutrition therapy for various disease states. Application of nutrition care process, nutrition screening and assessment, and medical record documentation. Prerequisite: HND 320, 321, Allied Health 105, Chemistry 140B, Physiology 201 and 208.

475-3 Nutrition Through the Life Cycle. The study of human nutrition during each phase of the life cycle, prenatal through geriatric. Students elect at least two phases for in-depth study. A general review of basic nutrition is included. Prerequisite: 320.

480-3 Community Nutrition. Study of the objectives, implementation strategies, and evaluation methods of nutrition programs in community health programs. Integration of nutrition into the health care system at local, state and federal levels included. Prerequisite: 475.

485-3 Advanced Nutrition. This course applies advanced principles of biochemistry and physiology to expand on basic nutrition information and explains the role of nutrients from

cellular and mechanistic aspects. Prerequisite: 320, 425.

490-3 Practicum in Sport Nutrition and Wellness. This is an opportunity to gain field experience in wellness and sports nutrition and collaborate with peers to share experiences and work through a variety of problem. It is a “capstone” course: one that brings together the theory, knowledge, and skills that you have gained through completion of the Nutrition Curriculum that you may apply in a live setting. The goal of this course is to expose students to a variety of situations they may encounter in a wellness and/or sports nutrition profession. Restricted to senior standing or instructor approval.

495-3 Nutrition and Obesity. This course will examine the multifactorial etiology of obesity, its corresponding health consequences, and the role of diet in prevention and treatment of obesity and its related comorbidities. At the end of this course, students will be able to (i) understand basic physiological and metabolic concepts underlying the development of obesity; (ii) discuss the health consequences of obesity across the lifespan; and (iii) describe the nutrition-related approaches for prevention and treatment of obesity. Prerequisite: HND 425.

Courses (HTA)

Hospitality and Tourism Administration

421-3 to 6 Special Projects in Hospitality and Tourism Administration. This course will provide students with an independent study opportunity for an in-depth study of topics or development of projects relating to their specific interest in the hospitality field. The topic or project area will be selected from issues, problems or developments in the hospitality and tourism fields. Course can be repeated. Grade of C or better required. Prerequisite: HTA 202. Special approval needed from the instructor.

435-3 Hospitality Marketing Management. This course concentrates on marketing for hotels, restaurants and tourism-related entities. Industry specific programs and characteristics will be examined. Students will develop a comprehensive marketing plan. The starting point for development of hospitality marketing strategy assumes basic marketing knowledge has been derived from completing a previous marketing course. The course is taught in a blended environment; student will attend class one day each week and view lectures and other material via SIU Online. A grade of C or better required. Prerequisite: HTA 202 and MKTG 304 with grades of C or better.

440-3 Hospitality Risk Management. Introduction to risk management, security, liability and contract management applicable to the awareness and/or operations of hotels, restaurants and resorts. A grade of C or better required. Prerequisite: HTA 202.

445-3 Sustainable Tourism Planning and Development. This course focuses on sustainable tourism development as management of all resources in such a way that we can fulfill economic, social, and aesthetic needs while maintaining cultural integrity, essential ecological processes, biological diversity, and life support systems. Prerequisite: HTA 202 or consent of instructor.

450-3 Event Marketing and Sponsorships. Strategic marketing and procurement of sponsors as they relate to events will be examined. Techniques related to association, corporation, and

other special events will be analyzed and applied.

455-3 Event Risk Management and Safety. Techniques used to reduce event risk and liability and increase safety for event attendees will be discussed. Crowd control, fire safety, attendee behavior, food and beverage safety, emergency medical services, among others, will be explored.

460-4 Food Service Management. The course includes practical experience in the operational administration of food service facility. Provides students an opportunity to exercise their ability and creativity to manage a noon luncheon service. The lab involves situations in which students fill the different roles involved with food service management. A grade of C or better required. Prerequisites: HTA 202, HTA 206, HTA 360 and HTA 373 with grades of C or better. Restricted to junior standing. Lab fee: \$30.

461-3 Service Organization and Management. (Same as HND 461) Managerial aspects of the hospitality industry as related to provision of quality service. Organizational structures, management techniques, decision-making abilities, ethics, leadership and human resource issues are examined. A grade of C or better required. Prerequisite: HTA 202 and 380 with a grade of C or better. Restricted to junior standing or consent.

465-3 Convention Management and Services. This course serves as a primer to the understanding of the role the meeting and convention planning business plays in hotel profitability. Students will explore successful procedures, practical insight, and foundational knowledge to succeed in convention management and services. Grade of C or better. Prerequisites: HTA 202 with a grade of C or better.

470-3 Hospitality Facilities Management. The course provides a comprehensive survey to manage the physical plants of hotels and food service establishments by working with the engineering and maintenance divisions in an effective and efficient manner. Areas of emphasis will include maintenance, energy conservation, environmental impact, and facilities management, with specific issues such as maintenance needs as they affect operations, property expenditures and resources, and a balance between guest satisfaction and environmental sustainability being addressed. A grade of C or better required. Prerequisite: HTA 202 or consent of instructor.

Forestry

COLLEGE OF AGRICULTURAL SCIENCES

<http://coas.siu.edu/academics/departments/forestry/index.html>
plcl@siu.edu

Graduate Faculty:

Akamani, Kofi, Assistant Professor, Ph.D., University of Idaho, 2011.

Burde, John H. II, Professor, *Emeritus*, Ph.D., University of Arizona, 1974; 1974.

Carver, Andrew, Professor, Ph.D., Purdue University, 1998; 1998.

Chilman, Kenneth C., Associate Professor, *Emeritus*, Ph.D., University of Michigan, 1972; 1973.

Groninger, John W., Professor, Ph.D., Virginia Polytechnic Institute and State University, 1995; 1997.

Holzmeuller, Eric J., Associate Professor, Ph.D., University of Florida, Gainesville, 2006; 2007.

Mangun, Jean C., Associate Professor, *Emeritus*, Ph.D., Purdue University, 1991; 1996.

Nielsen, Clayton K., Professor, Ph.D., Southern Illinois University Carbondale, 2001; 2009.

Park, Logan., Assistant Professor, Ph.D., Virginia Polytechnic Institute and State University, 2009; 2010.

Phelps, John E., Professor, *Emeritus*, Ph.D., University of Missouri, 1980; 1990.

Roth, Paul L., Professor, *Emeritus*, Ph.D., Kansas State University, 1968; 1967.

Ruffner, Charles M., Professor, Ph.D., Pennsylvania State University, 1999. 1999.

Schoonover, Jon E., Associate Professor, Ph.D., Auburn University, 2005; 2006.

Williard, Karl W. J., Professor, Ph.D., Pennsylvania State University, 1999; 1999.

Zaczek, James J., Professor and *Chair*, Ph.D., Pennsylvania State University, 1994; 1997.

The Department of Forestry offers advanced courses for the Master of Science degree with a major in forestry. In addition, curricula are available which permit graduate students with an interest in forestry to pursue their interest in Doctor of Philosophy degree programs in other departments, including Agricultural Sciences.

Admission

In addition to requirements set forth by the Graduate School, the Department of Forestry requires the following:

1. A minimum grade point average of 2.7 is required for admission ($A = 4.0$). A grade point average of 2.7 or higher is required for stipend eligibility when available.
2. The student is required to provide proof of proficiency in technical writing. Normally an expository essay is required to evaluate whether the student should have remedial grammar or writing courses.
3. Three letters of recommendation from former professors, employers, or other responsible individuals are required.
4. Each applicant must complete the statement of interest

form. This form indicates the student's area of interest in forestry and the faculty member with whom the student desires to study. All correspondence should be directed to the chair of the Department of Forestry.

5. This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Forestry. Applicants must pay this fee by credit card.

Retention and Completion Requirements

Upon the graduate student's arrival on campus, an advisory committee of 3–5 members of the graduate faculty will be formed to guide the student's work. The same committee will be responsible for preparation and administration of thesis exams and also for the review and evaluation of the thesis. The advisory committee chair and at least one other member of the committee shall be members of the Department of Forestry. The other members may be selected from any academic unit including forestry.

Summary of Events.

1. The deadlines for receipt of applications and official transcripts in the office of the Graduate School are (a) the second Saturday in July for admission to the fall semester (b) the last Saturday in November for admission to the spring semester (c) the last Saturday in March for admission to the summer term.
2. Letters of recommendation should reach the Department of Forestry chair by the same dates as above.
3. Acceptance by department and Graduate School should be announced one month or earlier than the desired matriculation date. A thorough review will be made by a screening committee of Department of Forestry graduate faculty and the departmental adviser. Students rejected for admission will also be notified.
4. Registration for first semester's work after student's acceptance by the department.
5. Appointment of advisory committee chair, written plan for course work, and selection of tentative thesis areas all within first 2 months of residence.
6. Preparation of formal written thesis outline and preparation of research proposal by the eighth week of the second semester.
7. Completion of final, typed or reproduced review copies of thesis and submission of advisory committee at least 3 weeks in advance of oral defense of thesis.
8. Oral exam to be followed by completion of required approval forms. If thesis requires modifications, this should be accomplished immediately to reach the graduate dean's office in due time set by the Graduate School. One bound copy of the thesis will be provided for the department, one for the chair of the advisory committee in addition to the electronic copy required for the Graduate School and a copy for the author. Additional copies may be required for projects sponsored by outside agencies.

Master of Science Programs

The Department of Forestry offers Master of Science students the opportunity to tailor their program to address their interests and career aspirations. Individual programs of study and research are developed by students in consultations with their faculty advisor to ensure timeliness and feasibility. Concentrations included forest resource management, ecological restoration, fire science, recreation ecology, human dimensions of natural resource management, wildlife habitat management, watershed management, hydrology, and soil science. Interdisciplinary research is encouraged. Prospective students should review the description of departmental graduate courses described later in this document. Also, please visit the Department's web site for a current description of faculty interests and expertise.

Assistantships and Fellowships. Research assistantships are sponsored each year by the McIntire-Stennis Cooperative Forest Research Act and through several externally funded research projects. Teaching assistantships funded by the College of Agricultural Sciences are also available.

In addition to general awards made through the Graduate School, stipends for research studies are available from the U.S.D.A. Forest Service, the U.S. Department of Interior, other federal and state agencies, and private corporations.

Requirements

Since the normal minimum requirement for graduation is 32 semester hours, the completion of degree work for students holding assistantships should be accomplished within four semesters (including summer) which is also the normal maximum span for financial aid.

The student must attain a grade of B or better for all courses specifically required in the student's academic program and which are offered by the Department of Forestry.

To gain teaching experience, graduate students are expected to assist in the classroom or laboratory for at least 1 academic semester (20 hours per week) during their tenure with the Department of Forestry. The remaining semesters will also involve either research or teaching at the rate of 20 hours a week.

Staff

In addition to the faculty listed in the Graduate School Catalog, several adjunct professors also hold appointments with the Department of Forestry. These professors are assigned to various natural resource agencies and can serve on graduate guidance committees.

Research Facilities Land. SIU is well endowed with a number of different forest types and agricultural land which are available to the Department of Forestry for teaching and research purposes. In particular, we are conducting or planning research and demonstration programs on forest plots and experimental fields of the 3000 acres of the University and its experimental farms. We also have access to wooded lands of the 600 acres of the Touch of Nature Environmental Center, 400 acres at the Pine Hills Field Research Station, and other forests.

Through various memoranda of understanding and special use permits we have use of forested lands and plots on the 43,000 acres of the Crab Orchard Wildlife Refuge, the 270,000 acres of

the Shawnee National Forest, and the 4000 acres of the Trail of Tears State Forest, all of which are within an hour's drive of Carbondale. A number of research projects are also ongoing on private lands in southern Illinois. Graduate research has also been conducted throughout the country through agreements with the U.S. Forest Service Experiment Stations and the U.S. Department of Interior, as well as internationally.

Physical Facilities. A variety of laboratories are housed within the department, including those specializing in historical ecology and fire, GIS, human dimensions, and water quality. A research greenhouse operated at the Tree Improvement Center on the western side of the campus is in operation for research and graduate teaching. Greenhouses and growth chamber facilities in the agriculture greenhouses in conjunction with the Department of Plant, Soil, and Agricultural Systems are also available.

Courses (FOR)

Courses in this department may require the purchase of supplemental materials. Field trips are required for certain courses.

401-3 Fundamentals of Environmental Education. (Same as Agriculture 401 and Recreation 401) A survey course designed to help education majors develop an understanding of environmental education principles and teaching both inside and outside the classroom. Requires field trip transportation fee not to exceed \$25 per course registration. Prerequisite: ten hours of biological science or ten hours of recreation and/or education, or consent of instructor.

402-3 Wildland Hydrology. Fundamentals of hydrology as related to forest and wildland water resources will be emphasized. Considerations will include the hydrologic cycle with emphasis on soil and groundwater regimes, evapotranspiration, surface and subsurface runoff and the quantity and timing of water yield. Offered Spring semester even years.

403-3 Agroforestry. This introductory, lecture-discussion course will examine the various agroforestry concepts, systems, technologies and practices. Focus will be on the potential use and benefits of agroforestry, which involves the deliberate combining of woody perennials with herbaceous/agronomic crops and/or animals, on the same land management unit, in some form of spatial arrangement and/or temporal sequence to produce desirable ecological and economical interactions among the different components. Restricted to junior standing or permission of instructor.

405-3 Forest Management for Wildlife. This course is designed to familiarize students with a scientific understanding of the theory and practice of forest management for wildlife. Students will gain knowledge of basic forestry management principles as they apply to wildlife; ecology and management of different types of forests for wildlife; and habitat requirements of forest birds, mammals, and herbs and applicable forest management techniques. May require field trip transportation fee not to exceed \$45 per course registration. Restricted to Forestry, Zoology, Bio Science, Animal Science, or Environmental Science majors/minors; sophomore or higher, or with consent of instructor.

409-3 International Forest Resources Decision-Making.

Examines management planning decision-making for multiple-use forests around the world. Reviews concepts useful for analyzing flow-resource problems, emphasizing systems approaches, introduces use of modern quantitative and qualitative methods to evaluate resource use alternatives. Case studies from around the world. Prerequisite: FOR 411.

411-3 Forest Resources Economics. Application of micro- and macro-economic principles to forest timber and non-timber production; capital theory, benefit-cost analysis; and economics of conservation. Prerequisite or Corequisite: Economics 240 or Agribusiness Economics 204.

412-2 Tree Improvement. Basic theories and techniques of obtaining genetically superior trees for forest regeneration. Restricted to senior standing.

414-3 Information Management. The collection of physical, biological, and social variables in the field of forestry through sampling survey. The procedures of data manipulation and calculation and the presentation of graphs and tables.

415-3 Urban Ecosystem Management. An introduction to fundamental concepts and processes associated with urban environments. Emphasis is on physical, chemical, and biological stresses imposed on landscapes and water resources influenced by land use conversion and subsequent urban sprawl. Requires field trip transportation fee not to exceed \$30 per course registration. Restricted to junior standing or consent of instructor.

416-4 Forest Resource Management. The application of business procedures and technical forestry principles to manage forest properties. Emphasis on integrated resource management for tangible and intangible benefits. Requires field trip transportation fee and supplemental expenditures not to exceed \$40 per course registration. Prerequisite: 351, completion of forest resource summer camp or consent of instructor.

417-2 Forest Land-Use Planning. Principles of location theory as a basis for determining land use; supply of forest land; population pressure and demand; conservation principles; determination of forest land values; institutional factors influencing forest land-use; forest taxation; special taxes, and capital gains. Taught in alternate years. Prerequisite: 411 or consent of instructor.

418-2 Marketing of Forest Products. The role of marketing in the forest industries; review of economic principles; product policy, planning the product line, pricing, marketing channels, marketing programs, marketing organization and marketing research as influences on the marketing of lumber, wood products, pulp and paper. Taught in alternate years. Prerequisite: 411 or consent of instructor.

420-3 Park and Wildlands Management. The management of state and federal parks and recreation areas. A systems approach toward management and decision-making will be emphasized. Requires field trip transportation fee and supplemental expenditures not to exceed \$40 per course registration.

421-3 Recreation Land-Use Planning. Principles and methods for land-use planning of park and recreation environments with emphasis on human dimensions of natural resource research. Focus on planning process and types of information to gather and organize. Application in group field projects. Requires field

trip transportation fee not to exceed \$25 per course registration. Prerequisite: 220, 420 or consent of instructor.

422C-6 Park and Wildlands Management Camp. A study of park conditions, visitors, and management practices at selected county, state, and federal park systems in the U.S., including the federal wilderness preservation system. Requires field trip and supplemental expenditures not to exceed \$550 per course registration. Summer camp fees and costs are outlined in the Forestry major - Forest Recreation and Park Management Specialization. Prerequisite: FOR 220 or consent of instructor.

423-3 Environmental Interpretation. (Same as Agriculture 423 and Recreation 423) Principles and techniques of natural and cultural interpretation. Two hours lecture, three hours laboratory. Requires field trip transportation fee not to exceed \$40 per course registration. Prerequisite: ten hours biological science or ten hours of recreation.

428-2 Urban Forestry. An introduction to principles and practices useful in the management of trees and forests in populated settings. Emphasis is placed on the development of comprehensive management strategies consistent with the biological, physical, economic and social constraints of the urban environment. Restricted to junior or senior standing or permission of the instructor.

429-2 Watershed Management Field Laboratory. A field intensive laboratory course focused on hydrological and biological methods used to manage watersheds and assess watershed health. Laboratory topics include stream gauging, soil water and ground water sampling, channel morphology, stream benthos measurements and water quality analysis of stream and lake ecosystems. Requires field trip transportation fee not to exceed \$30 per course registration.

430-3 Wildland Watershed Management. Emphasis is placed on the principles, technical problems, procedures, alternatives, and consequences encountered in managing wildland watersheds for the production of quality water in harmony with other uses.

431-3 Regional Silviculture. Designed to evaluate the various silvicultural practices as they are commonly employed in various regions of the United States. Offered alternate years. Prerequisite: 310.

451-2 to 3 Natural Resources Inventory. This course is designed to familiarize students with a scientific understanding of major topics in wildlife ecology and management, with a special focus on Forestry majors and natural resource inventory techniques. Students will gain knowledge of the history of the field of wildlife management, primary wildlife management principles and practices, ecological theory pertinent to wildlife populations and habitats, and current important issues/problems regarding wildlife management and natural resource inventory. May require field trip transportation fee not to exceed \$25 per course registration. Restricted to Forestry, Zoology, Bio Science, Animal Science, or Environmental Science majors/minors; or consent of instructor.

452-3 Forest Soils. Forest soils is designed to give the student a more comprehensive in-depth study of the patterns and processes of soil formation and their relation to forest productivity. Upon completion of the course, student will be familiar with soil/plant interactions, water relationships, and forest soil management for sustainable productivity and environmental quality. This course provides a sound basis for learning basic soils concepts

specifically related to forest ecosystems which are beneficial to Forestry majors and those majoring/minoring in Soil Science or related to natural science disciplines. Prerequisites: FOR 352 or consent of instructor. Requires field trip transportation fee not to exceed \$25 per course registration.

452L-2 Forest Soils Laboratory. Companion laboratory for FOR 452. Emphasis is on methods to characterize and evaluate the chemical, physical, and biological properties of forest soils. Requires field trip transportation fee not to exceed \$25 per course registration. Offered spring semester, even years.

453-2 Environmental Impact Assessment in Forestry. Methods of assessing the environmental impact of land-use systems on forest resources and assessing the impact of forest management systems on environmental quality are presented. Case studies culminating in the preparation of environmental impact statements are emphasized. Requires field trip transportation fee not to exceed \$25 per course registration. Restricted to senior standing in a natural resource major.

454-2 to 8 Forest Ecology Field Studies. A study of forest communities, soils and site conditions in one of the following ecosystems: (a) Boreal; (b) Lake states; (c) Southern Appalachians; (d) Southern pine. Course requires a field trip of about 10 days. Each trip is worth two semester credits; a maximum of 6 credits may be applied toward graduate credit. Required field trip transportation fee not to exceed \$300 per course registration (a,b,c, or d). Restricted to senior standing in natural resources or biological sciences, courses in tree identification, forest ecology and soils. Special approval needed from the instructor.

460-2 Forest Industries. Analysis of raw material requirements, the processes and the products of forest industries. The environmental impact of each forest industry will also be discussed.

470-2 Wilderness Management, Policy, and Ethics. Study of current management philosophy and practice in America's wilderness. Analysis of current wilderness policy and its historical evolution. Discussion of the evolution of the wilderness idea and the individuals that have influenced it. Weekend field trip required. Required field trip transportation and materials fee not to exceed \$80 per course registration. Offered alternate (even) years. Restricted to senior standing.

480-3 Natural Resource Conflict Management. Examines the role and methods of stakeholders in influencing natural resource policies. Emphasis on applied methods, techniques and strategies for conflict resolution, especially collaborative decision making and persuasion theory. Restricted to junior standing or consent of instructor.

494-1 to 6 Practicum. Supervised practicum in a professional setting. Emphasis on administration, supervision, teaching and program leadership in community, school, park, forest, institution and public or private agencies. Students should enroll according to their curriculum specialization: (a) Forest environmental assessment, (b) Outdoor recreation resource management, (c) Forest resources management. Special approval needed from the instructor.

500-2 Principles of Research. Research philosophy, approaches to research; theory, hypotheses inference, and predicting; problem identification, project development and organization; methods of data collection, analysis and presentation; drawing

conclusions and organizing results.

501-1 Graduate Seminar. Presentation and critiques of current research project of faculty, graduate student and selected resource persons.

502-3 Advanced Watershed Hydrology and Management. A study of current issues relating to hydrology and the management of water resources in forested and mixed land-use watersheds. Readings, discussions and projects will focus on research and management topics in water quality and quantity at regional, national and international levels. Prerequisite: FOR 402 or FOR 430 or equivalent or consent of instructor.

504-2 Tree Physiology Concepts and Applications. A study of physiological concepts and attributes of trees that underlies growth, ontogeny, and reproduction in the context of genotype, environment, and their interaction. Physiological concepts will be presented and discussed in a framework that relates their influence on forest stand management applications and activities such as regeneration, tree planting, silvicultural activities in native forests and plantations, and stand response to disturbance, and the development and maintenance of old growth. Prerequisite: PLB 200, FOR 331 or a plant physiology course.

506-3 Advanced Landscape Ecology. (Same as 406) (506-3 will have an additional lab requirement) Review and evaluation of current research and concepts in landscape ecology management. Principles of landscape ecology in the context of forested systems will be presented and discussed. Emphasis on how spatial heterogeneity and human activities influence landscape patterns. Prerequisite: G.I.S. course or consent of instructor.

508-2 Historical Ecology. Introduction to the basic concepts and foundations of historical ecology, a discipline which joins traditional ecology with an investigation of human landscape transformation. Emphasis is placed on the interdisciplinary approach to historical ecology with readings in pollen analysis, dendrochronology, land-use history, archival and historical sources, and traditional vegetation surveys and reconstructions. Field trip cost approximately \$35. Offered alternate years. Prerequisite: 300 level plant ecology course or equivalent or consent of instructor.

510-2 Advanced Silviculture: Landscape Rehabilitation. Current and emerging issues in silviculture and landscape-scale natural resource and agricultural sustainability are addressed at the individual manager/farmer or small community level. Case studies consider underlying physical and biological principles underlying successful rehabilitation practices across a wide range of social contexts and physical landscapes. Experimental methodologies and their application to management problems are critiqued. Water, grazing, food crop, wildlife/biodiversity conservation, and biofuels are emphasized with accommodations for students with related interests. This course is intended for students with undergraduate training or practical backgrounds in natural resource management or agriculture and who are seeking to integrate these disciplines toward developing actionable solutions. Special approved needed from the instructor.

511-2 Advanced Forest Resources Economics. Application of microeconomic, macroeconomic and capital theory to forest resource problems; introductory econometric methods; long

range supply and demand projections; international forest economics and policy problems decision theory in forest resource management. Offered alternate years. Prerequisite: 411 or equivalent or consent of instructor.

512-2 Tree Selection and Breeding. Quantitative methods of describing variation patterns of trees, testing genetic and environmental effects and interactions and evaluations of tree improvement program. Prerequisite: 412 or consent of instructor.

515-3 Advanced Urban Ecosystem Management. An examination of concepts and processes associated with urban environments. Physical, chemical, and biological stresses associated with land use change and urban sprawl will be discussed and presented with a focus on water resources. Class discussion, readings, and projects will concentrate on current research in the urban environment. Restricted to graduate standing or consent of instructor.

516-2 Advanced Forest Management. Case studies in forest land management, management planning, utilizing computer programming, CFI and TSI role in long range management planning. Offered alternate years—odd. Prerequisite: FOR 416, FOR 331 and summer camp or consent of instructor.

520-2 Advanced Park Planning. Study of nature and functions of the recreation environmental planning process in theoretical and policy terms. Types of plans at local, regional and state levels. Evaluation of different types of planning approaches and their utility in particular situations. Offered alternate years. Prerequisite: FOR 421 or consent of instructor.

521-2 Recreation Behavior in Wildlands Environments. Review of sociological and psychological theories relevant to outdoor recreation planning; management alternatives. Review of current behavior research in outdoor recreation. Application of behavioral concepts to recreation planning and administration. Offered alternate years.

523-3 Urban Tree Management. Establishment and maintenance of trees as beneficial components of urban environments. Tree functionality is addressed from biological, social, and economic opportunities and constraints commonly associated with cities and towns. Management of trees and wooded areas within ecological urban landscapes is addressed from the perspective of multiple constituencies. This course is primarily intended to be taken as part of the ecological urban landscapes graduate program and is offered Online Only. May be taken as a substitute for FOR 428. Students who have achieved a passing grade in FOR 428 are not eligible to take this course.

523-2 Advanced Resource Interpretation. Survey of theories and methods relating to resource interpretation planning and practice resulting from research in communication, education and marketing. Examines case studies and existing issues current to the profession of interpretation. Stresses relationship between theory and application. Prerequisite: 423 or consent of instructor. Offered alternate years.

530-2 Forest Site Evaluation. A discussion of the factors affecting site quality and their use in present site evaluation methods. Lectures will draw upon recently published scientific literature as well as forest research data collected and analyzed for southern Illinois forests. Laboratories will include sampling of forest sites and stands with subsequent analysis of data using graphic and statistical techniques and a computer to

develop site evaluation models. Cost \$20. Prerequisite: BIOL 307 or consent of instructor.

531-2 Disturbance Ecology. Provide a historical overview and current perspective on major topics in forest ecology including natural disturbance, gap and patch dynamics, and relevant restoration ecology techniques. This is accomplished through a critical examination of the literature through reading, group discussions, and field trips. Two to three field trips will be organized during the semester to observe the effects of natural disturbance with an approximate total cost of \$25 per student. Offered alternate years. Prerequisite: 300 level plant ecology course (or equivalent) or consent of instructor.

551-3 Wildlife-Habitat Relationships. Theory and practice of analyses pertaining to the study of wildlife-habitat relationships. Understanding of common data collection techniques in wildlife and forestry science. Use of computers, statistical programs, and other forms of data analysis. Ability to work on practical and applied problems in wildlife conservation. Special approval needed from the instructor.

585-3 Human Dimensions of Natural Resource Management. Multidisciplinary study of influences and constraints on human-renewable natural resource interactions. Readings, discussion and problem solving to enhance appreciation of human dimensions as an integral component of natural resource management. Emphasis on diverse perspectives on forest, fisheries, and wildlife; conceptual frameworks and research methodologies. Offered alternate (odd) years.

588-1 to 6 International Graduate Studies. University residential graduate program abroad. Prior approval by the department is required both for the nature of program and the number of hours of credit.

590-1 to 4 Readings in Forest Resources. Intensive consideration is given to current practices and problems in forestry. Special approval needed from the instructor.

591A-G 1 to 4 Directed Studies in Forest Resources. Intensive study of disciplines fundamental to forestry. **(a)** Dendrology. Study of the identification of native and exotic trees. **(b)** Forest Autecology. Study of the physiology of individual tree species in relation to their environment. **(c)** Forest Community Ecology. Study analysis and integration of tree growth, forest structure and classification in relation to climate/edaphic factors as an ecological basis for forest management. **(d)** Forest Measurements. Study of measurement, statistical and data processing concepts; volume, growth, yield of forest products and methods of sampling forest resources. **(e)** Forest Recreation. Study of principles and methods for land-use planning of park and recreation environments. **(f)** Silviculture. Study of concepts and techniques utilized in the silvicultural treatment of forests. **(g)** Wildland Fire Management. Study of all aspects of fire as a phenomenon in wildland management. **(h)** Forest Soils. An introduction to the characterization and fundamental concepts of forest soils and their relationships to forest communities and forest management practices. Emphasis is on the chemical, biological, and physical properties of forest soils as related to forests and forest management. Special approval needed from the instructor.

593-1 to 4 Individual Research. Directed research in selected fields of forestry.

599-1 to 6 Thesis. A Minimum of three and a maximum of six

hours to be counted toward a Master's degree.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Geography and Environmental Resources

COLLEGE OF LIBERAL ARTS

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Graduate Faculty:

Baumann, Duane D., Professor, *Emeritus*, Ph.D., Clark University, 1968; 1967.

Duram, Leslie, Professor, Ph.D., University of Colorado at Boulder, 1994; 1994.

Dziegielewski, Benedykt, Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1983; 1985.

Horsley, Doc., Assistant Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1974; 1968.

Ford, Trenton., Assistant Professor, Ph.D., Texas A&M University, College Station, 2015; 2015.

Li, Ruopu., Assistant Professor, Ph.D., University of Nebraska, Lincoln, 2012; 2015.

Lieber, Stanley R., Professor, *Emeritus*, Ph.D., University of Iowa, 1974; 1975.

Perk, H.F.W., Lecturer, *Emeritus*, A.B., University of California, Los Angeles, 1951; 1964.

Remo, Jonathan, W.F., Assistant Professor, Ph.D., Southern Illinois University Carbondale, 2008; 2012.

Schoof, Justin, T., Professor and *Chair*, Ph.D., Indiana University, 2004; 2006.

Secchi, Silvia, Associate Professor, Ph.D., Iowa State University, 2000; 2014.

Sharpe, David M., Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1968; 1966.

Wang, Guangxing, Professor, Ph.D., University of Helsinki, Finland, 1996; 2007.

Weinert, Julie, Senior Lecturer, Ph.D. Ohio State University, 2008; 2005.

The Department of Geography and Environmental Resources offers a program that leads to the Master of Science degree in geography and environmental resources. The Department also participates in the Environmental Resources and Policy Doctor of Philosophy program sponsored by the Graduate School (described in greater detail elsewhere in the Graduate Catalog).

Geography and Environmental Resources is the study of how humans modify, impact, adapt to, monitor, and manage the natural environment they inhabit. Geography students study the dynamic relationship between nature and society in the field and the computer laboratory as well as in the traditional classroom. Students choose among three concentrations focusing on different aspects of geography and environmental resources: environmental sustainability, geographic information science (GIS), and climate and water resources.

Students take courses that give them a foundation in these dimensions of environmental resources through a core program, then develop a research focus. Students also develop the analytic and research skills appropriate to their research interest.

The graduate program stresses a problem-solving perspective, for which habits of critical analysis and dialogue are essential. Students take the initiative in designing and carrying out their programs with the guidance of an advisory committee and the departmental faculty. Geography maintains linkages with many other departments. Courses and faculty expertise in other departments complement those in geography, and students are encouraged to take advantage of this. Each student's progress is assessed at regular intervals by the faculty, and the student is notified of the faculty's assessment. The student is expected to show continued progress in carrying out the program of study, and in developing habits of scholarship and professionalism.

This program requires a \$65.00 nonrefundable application fee that must be submitted with the application for Admissions to Graduate Study in Geography and Environmental Resources. Applicants must pay this fee by credit card when completing the online application.

Requirements for the Master of Science Degree

Advisement. Students newly admitted to the master's degree program are advised by the graduate program director, with the assistance of departmental faculty. Students choose a permanent adviser at the end of the first semester in residence. The choice of permanent adviser and advisory committee is made in consultation with the graduate faculty, taking into consideration such matters as faculty expertise and faculty advisee loads.

Degree Requirements. To obtain the master's degree, the student shall:

1. Complete all degree requirements specified by the Graduate School, and explained under degree requirements, master's degree program in the *Graduate Catalog*. A total of 30 Graduate Credit Hours must be completed, with 15 of these hours at the 500 level or above.
2. Include as required courses the following: GEOG 500, Principles of Research, during the first fall semester in residence; GEOG 501 Seminar in Geographic and Environmental Research, the following semester; GEOG 504, Spatial Analysis or GEOG 512, Applied Geographic Statistics or equivalent, and one research seminar at the 500-level. GEOG 502, Geographic Information Systems is recommended depending on the student's background.
3. In consultation with an adviser, develop a program of study, identifying courses to be taken, research skills to be developed, deficiencies to be rectified. This shall be approved by the faculty. The program of study shall include a core of substantive courses in geography and environmental resources, as explained in the policy statement on core curriculum for master's degree students, available from the graduate program director. The program of study may include courses offered by other departments. The graduate faculty will meet to review and approve/disapprove the program of study of each master's degree student enrolled in GEOG 500. An approved program of study will be filed with the graduate program director and department chair as part of GEOG 500.

4. Develop a thesis or research paper proposal. The thesis or research paper proposal must be approved by the student's master's advisory committee before the student registers for GEOG 599, Thesis or GEOG 593A-C, Research in Geography and Environmental Resources. A total of 6 semester hours of GEOG 599 may be awarded for a thesis at the discretion of the advisory committee upon final examination on the thesis (see #5 below). A total of 3 semester hours may be awarded for a research paper.
5. Submit a thesis or research paper to the advisory committee at least 2 weeks before the defense. A student who writes a thesis will be examined by the committee at a meeting that may be attended by other faculty and students. A research paper may be evaluated and approved by the advisory committee with or without public presentation.

Certificate in GIS

The Graduate GIS Certificate enables students to focus on advanced geospatial techniques and analytical skills. This certificate meets the needs of the expanding job opportunities for Masters' and Ph.D. students. Students must be admitted to an SIU graduate program or the SIU non-declared graduate program and maintain a 3.0 GPA in the certification courses. This certificate ensures that the students understand advanced mapping technologies; know how to combine individual models and functions in ArcGIS to carry out a complicated spatial analysis task; master advanced digital image processing and analysis technologies; and obtain competence in designing, developing, and managing spatial databases. Further, they will demonstrate an understanding of GIS's relationships with remote sensing, global positioning system (GPS), mathematics, statistics, and other sciences and obtain capacity in integrating multi-disciplinary methods for problem-solving. Finally, they will be competent in planning, developing, and implementing a complex GIS project. The program requires students to complete 18 credit hours of graduate level coursework from the following:

- GEOG 502(3) Geographic Information Systems
- GEOG 504(3) Spatial Analysis
- GEOG 506(3) Intro to Remote Sensing
- GEOG 508(3) Advanced Remote Sensing
- GEOG 520(3) Advanced GIS Studies
- GEOG 528(3) GIS Portfolio/GIS Capstone Project

Certificate in Sustainability

The Graduate Certificate in Sustainability enables students to expand their knowledge and understanding of the long-term sustainable use of the earth's resources, including water, land use and food systems, climate change, urban sustainability, and "green" energy. This certificate meets the needs of the expanding job opportunities in environmental sustainability. Students must be admitted to an SIU graduate program or the SIU non-declared graduate program and maintain a 3.0 GPA in the certification courses. The program requires students to complete 18 credit hours of graduate level coursework, as follows:

- GEOG 524(3) Sustainable Development

Total of 15 or more Credit Hours from the following:

- GEOG 521(3) Urban Sustainability

- GEOG 522(3) Environmental and Energy Economics
- GEOG 526(3) US Environmental Policy
- GEOG 529(3) Geography of Local and Organic Food
- GEOG 531(3) Climatology
- GEOG 536(3) Natural Hazards
- GEOG 539(3) Global Climate Change
- GEOG 554(3) Conservation and Environmental Movements
- GEOG 570(3) Contemporary Issues in Environmental Studies

Students interested in Environmental Sustainability or Climate and Water Resources concentrations delivered through distance education should contact the Chair or Graduate Program Director to discuss opportunities for transfer credits and flexibility in course requirements. Requirements for the Doctor of Philosophy Degree (See Environmental Resources and Policy Ph.D. program.)

Courses (GEOG)

419-3 Enterprise GIS Planning and Implementation. Students will gain both theoretical and practical understanding of the design process of enterprise GIS; be able to assess the scope of a system and address data and technology requirements of that system; become exposed to a host of the state-of-the-art tools and concepts in enterprise GIS; and learn skills for hardware, software and computer networking issues. Students are expected to have a basic working knowledge of ArcGIS and ArcIMS. Prerequisite: GEOG 401 or consent of instructor. Lab Fee: \$20.

430-3 Environmental Systems Analysis. Exploration of the major environmental systems relevant to environmental planning. Topics include concepts of systems and system behavior; basics of systems analysis and modeling environmental systems; environmental fluxes of energy and materials (e.g., hydrologic cycle, carbon cycle, energy budgets, erosion and sediment transport, role of biosphere in organizing fluxes); environmental variability.

452-3 Environment and Population. Introduction to population geography. Emphasis is on the relationships between population trends, resource use patterns and environmental impacts. Topics include methods and data used to describe and predict populations, theories of population, and policy issues that relate to the interaction between population, quality of life and environmental quality. Prerequisite: GEOG 320 or consent.

454-3 Conservation and Environmental Movements. Emphasizes the ways in which humans view and interact with the environment. Conservation literature and the works of influential environmentalists are studied. Specific theories and environmental movements which help to explain society's current perception and use of the environment are studied.

457-3 American Environmental History. (Same as HIST 457) An exploration of the attitudes toward and the interaction with the natural resource environment of North America by human settlers. Coverage from the Neolithic Revolution to the present.

458-3 Applied GIS. This course provides practical GIS applications and draws from special topics in data visualization and environmental applications. The topic on data visualization includes an overview of techniques for visualizing large-

scale datasets and is inspired by concepts from information visualization. Topics in environmental applications consist of risk assessment, digital elevation model processing, and watershed delineation and hydrological modeling. Students taking this course will distinctively learn: (1) how to visualize geographic data; (2) how to use different environmental risk assessment methods; (3) how to assess, detect, and characterize environmental risks and potential threats; and (4) how to create meaningful visualization scenes to support environmental decision-making. Active learning experiences will be achieved through the use of classroom lectures, lab exercises, group tasks, and presentations. Prerequisite: GEOG 401 or GEOG 310I or consent of instructor. Lab fee: \$20.

470-3 Contemporary Issues in Environmental Studies. Background, current, and future issues linking social responses to scientifically relevant environmental issues. Students learn about the multiple geographic, social and ecological factors that influence environmental citizenship and participation. Topics include conservation/preservation, green jobs, environmental non-governmental organizations, policy influences, and environmental education. Lectures, guest lectures and seminar style discussions. Students develop and demonstrate skills in problem solving, communication, and professionalism.

471-3 Environmental Impact Analysis. Techniques of assessing the impact of human activities on the environment, including weighting schemes, cost-benefit analysis, linear programming, and ecological impact assessment. Emphasis is on placing NEPA and EIS writing in legal, economic and environmental perspective.

480-2 to 6 Internship in Geography. Supervised field work in private or public organization dealing with environmental management or GIS. A report or professional poster on the work is required at the end of the semester. Courses may be repeated, but no more than 3 credit hours of either 480 or 481 may be applied to an undergraduate major or graduate degree. Restricted to students majoring in Geography and Environmental Resources or minoring in Environmental Studies. Special approval needed from the department.

481-3 to 12 Cooperative Work Experience in Geography. Placement of advanced undergraduate or graduate student in private or public organization for one or more semesters in paid career-related position. Student gains professional experience, under faculty and on-site supervision. A report or professional poster on the work is required at the end of the semester. Three credit hours of either 480 or 481 may apply toward requirements for a Geography undergraduate major or graduate degree. Restricted to students majoring in Geography and Environmental Resources or minoring in Environmental Studies. Special approval needed from the department.

500-3 Principles of Research. Problem identification in research, review of examples of geographic research, analysis of results of research and project statements are explored with appropriate faculty. Presentation of student research problems justification and identification of student program to complete degree are required.

501-3 Seminar in Geography and Environmental Research. Seminar approach to problems of completing background research design of project statements, identification of research methodology and completion of thesis/dissertation project

statements. Restricted to graduate standing.

502-3 Geographic Information Systems. (Meets with GEOG 401) An overview of geographic information system (GIS)-related topics, including GIScience (theoretical foundation), GIS technology (software training), and GIS applications (real world solutions). Provides basic principles, concepts and applications of GIS in the context of GIScience - a basic research field which seeks to redefine geographic concepts and their use. The theoretical foundations of GIS are informed by three basic areas: cognitive models of geographic concepts, computational implementations of geographic models, and the interaction between GIS and society. Recommended: GEOG 310i or CE 263. Lab fee: \$20.

504-3 Spatial Analysis. (Meets with GEOG 404) This spatial analysis course is an introduction to statistical methods for geographers. The course provides an overview of the application of spatial data analysis techniques, with a concentration on spatial statistical theories, concepts and approaches in the general context of the emerging fields of geographic information system (GIS) and science (GISci). The main focus of this course is on how techniques for the analysis of spatial data can effectively be applied in a GIS environment, with a particular emphasis on the study of spatial patterns, distributions, and associations. Prerequisite: GEOG 401 or 501, or consent of instructor. Lab fee: \$20.

506-3 Introduction to Remote Sensing. (Meets with GEOG 406) An introduction to the fundamentals of remote sensing as applied to environmental management. This course will examine the theoretical and practical aspects associated with the use and analysis of aerial photography and satellite imagery. These include how remote sensing data are acquired, displayed, analyzed and how information on our environment can be extracted from such data. Students will be introduced to manual interpretation and digital image processing techniques of remotely sensed imagery. Students will have the opportunity to gain hands-on experience using image processing software. Lab fee: \$30.

508-3 Advanced Remote Sensing. (Meets with GEOG 408) Advanced techniques in the analysis of remotely sensed data. Emphasis is placed on digital image processing using state of the art technology. Students will be expected to develop individual problem-driven projects that use the knowledge, tools and techniques that are developed in this course. Prerequisite: GEOG 406, 506, or consent of instructor. Lab fee: \$30.

512-3 Applied Geographic Statistics. Introduction to basic statistical methods and skills related to the application of statistics to problems in geography. Lectures are supplemented with meetings in computer labs to stress the applied aspects of the course. Topics covered include descriptive statistics, time series analysis, probability, confidence intervals, hypothesis testing, correlation and regression, and spatial statistics.

516-3 Cartographic Design. (Meets with GEOG 516) Introduction to the concepts and principles of map design and automated cartographic techniques used to promote the understanding of a map as a powerful communication model. Examines techniques for the representation, manipulation, display, and presentation of spatial data using computer mapping techniques and graphics software. Team based projects will address a geographic problem and produce a professional final map. Prerequisite: GEOG 401, 502, or consent of instructor. Lab fee: \$20.

517-3 GIS Programming and Customization. (Meets with GEOG 417) An introduction to computer programming principles and their application in a GIS environment. GIS scripting language principles will be introduced and students will learn the structure of ArcObjects, the program organization of ERSI and ArcGIS projects as well as the use of Visual Basic application to manipulate the basic mapping objects. Coursework will involve developing a more advanced program using an extension of choice. Prerequisites: GEOG 401, GEOG 502, with grades of C or better or consent of the instructor.

520-3 Advanced Geographic Information Systems Studies. (Meets with GEOG 420) This course focuses on six emerging themes of geographic information science: geospatial ontologies, enterprise GIS, GIS design, geographic data mining and knowledge discovery, geographic data structure and algorithms, 3D imaging and visualization. A seminar approach will be adapted to organize the class into five groups to capture skills in computer programming, cognitive science, database design and systems, computational and mathematical knowledge, and 3D imaging and visualization. Five studio exercises to provide hands-on training and practice will be conducted in the GIS laboratory. Students will be expected to develop individual problem-driven projects that use the knowledge, tools, and techniques that are developed in this course. Prerequisites: GEOG 401 or 502 with a grade of C or better, or consent of instructor. Lab Fee: \$20.

521-3 Urban Sustainability. Sustainability of urban areas is viewed from a geographical perspective to focus on the complex relationships among environmental, sociocultural, economic, and political phenomena. Considerable time is devoted to identifying, analyzing and explaining selected urban problem and their sustainable solutions.

522-3 Environmental and Energy Economics. (Meets with GEOG 422, GEOG 422H) Economics of renewable and nonrenewable natural resources management and environmental policy. Topics covered include: static and dynamic efficiency, market efficiency and market failures (market power, externalities and public goods), the economics of nonrenewable resource extraction, renewable resources management (with a focus on forests and water), mechanism design choices and their implementation in the real world, and the role of the private and public sectors in research and development.

524-3 Sustainable Development. Analysis of the human, economic, technological, environmental and political dimensions of sustainable development focusing on public and private sector institutions that manage renewable and non-renewable natural resources. Emphasis is sustainable development as applied to: (a) population, (b) energy and the atmosphere, and (c) agricultural impacts on soil and water resources.

525-3 Advanced Water Resource Management. The purpose of this course is to provide the student with an overview of concepts, theory, and policies in water resource management and a deeper understanding in at least one topic within water management. This is accomplished through instructor led lectures, assigned readings, and in class exercises that teach the student about the concepts that underpin water management during the first half of the semester. Then in the second half of the semester, each of the students selects

the water management topic and teaches the class about the subject through lecture and discussion of keystone papers in their selected water management topic.

526-3 US Environmental Policy. This course investigates the US system of environmental regulation: the background of social and environmental movements that influence US policy and the agencies involved in US environmental regulation. Emphasis is on US regulations and US participation in global environmental policies. Overall, the focus is on spatial variations in environmental regulation; or the geography of environmental quality.

528-3 GIS Portfolio / GIS Capstone Project. (Meets with GEOG 428) Independent development and implementation of a major GIS project on analysis of spatially referenced data sets to produce digital products and to solve real world problems. Data obtained from multiple sources, including downloads from online sources, field-collected data, and published map data. A project portfolio and a poster approved by the instructor must be submitted for successful completion. Prerequisite: GEOG 401 or 502 and 406 or 506, and consent of instructor. Lab fee: \$20.

529-3 Seminar: Geography of Local and Organic Food. A discussion of geographic topics in local and organic food and farming. This includes: spatial distributions, landscapes, policy influences, organic agricultural productivity, food safety, consumer concerns, organic farmers' decision making, organic marketing, local food systems, and organic certification. Restricted to graduate standing.

531-3 Climatology. Contemporary view of climatology as an interdisciplinary science which focuses on advanced understanding of the physical processes that drive the climate system and the development of skills related to climate prediction and assessment of human impacts on global and regional climate.

533-3 Advanced Field Methods in Geography. Quality geographic research depends on obtaining reliable data through an informed research design. Exploring both social and environmental processes, students will actively participate in developing and conducting investigations. Using the SIU Carbondale campus and surrounding region as a laboratory, lab exercises will include human geography, geomorphology, climatology and biogeography. Analytical techniques will include statistics and mapping. Lab fee: \$20.

534-3 Water Resources Hydrology. Microclimatic factors which affect the hydrologic events of various climatic regions are treated extensively. Methods of estimating geographic variations in hydrologic relations to climatic and microclimatic especially evapotranspiration, are compared and evaluated. Consequences of alternative land uses on climate and hydrology are considered regionally.

536-3 Natural Hazards. This course develops the skills and perspectives needed to effectively manage natural and technological disasters. Major themes include risk analysis, hazard mitigation and preparedness, response and recovery of the economic and social infrastructure in areas impacted by earthquakes, floods, drought, toxic material releases and other catastrophic events. Geographic training places a geographer at the forefront of developing hazard management solutions for society.

539-3 Seminar on Global Climate Change. This course examines the major environmental, social, and policy issues relevant to global climate change, including natural and anthropogenic causes, environmental pollution, land use/land cover change, extinction and biodiversity issues, and potential climate change-related impacts on human health. Restricted to graduate standing.

540-3 Water Resource Management. (Meets with GEOG 440) Provides students with an in-depth understanding of relevant concepts, theory and policies in water resource management. The course is designed to be an interdisciplinary class taught largely in a seminar style. During the first half of the semester, the class is led by the instructor and reviews the physical, biological and social concepts which underpin water resource management. In the second half of the semester, students lead the class to review and discuss human impacts on aquatic systems and the role water resource management plays in striking the balance between human uses and aquatic services and the preservation of these important systems.

554-3 Conservation and Environmental Movements. This course emphasizes the ways in which humans view and interact with the environment. Conservation literature and the works of influential environmentalists are studied. Specific theories and environmental movements which help to explain society's current perception and use of the environment are studied.

556-3 Geographic Visualization. (Meets with GEOG 456)F This course will provide an overview of geographic visualization with a concentration on the theories, concepts and approaches of information visualization. Lectures and laboratory exercises will focus on the practical issues of exploratory data analysis (EDA), cartographic design process, web cartography, data quality and generalization, thematic mapping, map animation and multi-media applications. The course will provide students with a working knowledge of commercial software commonly used for graphic-based applications. Students are expected to utilize their hands-on experience gained from the lab exercises to further enhance their proficiency in graphic software. Two hours of seminar and classroom presentations, two hours of studio exercises each week. Lab fee: \$30.

570-3 Contemporary Issues in Environmental Studies. Background, current, and future issues linking social responses to scientifically relevant environmental issues. Students learn about the multiple geographic, social and ecological factors that influence environmental citizenship and participation. Topics include conservation/preservation, green jobs, environmental non-governmental organizations, policy influences, and environmental education. Lectures, guest lectures and seminar style discussions. Students develop and demonstrate skills in problem solving, communication, and professionalism.

580-3 Internship in Geography. Supervised field work in private or public organization dealing with environmental management or GIS. A report or professional poster on the work is required at the end of the semester. Special approval needed from the department.

591-2 to 4 Independent Studies in Geography. Restricted to graduate standing.

593A-2 to 24 (2 to 6 per semester) Research in Environmental Sustainability. Restricted to graduate standing.

593B-2 to 24 (2 to 6 per semester) Research in Geographic

Information Science. Prerequisite: GEOG 500 and GEOG 501. Restricted to graduate standing.

593C-2 to 24 (2 to 6 per semester) Research in Climate & Water Resources. Restricted to graduate standing.

596-2 to 4 Field Course. Restricted to graduate standing.

599-2 to 6 Thesis. Restricted to graduate standing.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their thesis, or research paper. The student must have completed the minimum thesis or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

699-1 Postdoctoral Research. Must be a Postdoctoral Fellow. Concurrent enrollment in any other course is not permitted.

Geology

COLLEGE OF SCIENCE

www.geology.siu.edu/

geology@geo.siu.edu

Graduate Faculty:

Anderson, Ken B., Professor, Ph.D., University of Melbourne, Australia, 1989; 2004. Organic geochemistry.

Conder, James, Associate Professor, Ph.D., Brown University, 2001; 2008. Geodynamics, seismology.

Crelling, John C., Professor, *Emeritus*, Ph.D., Pennsylvania State University, 1973; 1977.

Esling, Steven P., Associate Professor and *Chair*, Ph.D., University of Iowa, 1984; 1982. Hydrogeology, quaternary stratigraphy, geomathematics.

Ferre, Eric C., Professor, Ph.D., University of Toulouse, France, 1989; 2003. Structural geology, rock magnetism, tectonics.

Fifarek, Richard H., Associate Professor, *Emeritus*, Ph.D., Oregon State University, 1985; 1985.

Filiberto, Justin, Assistant Professor, Ph.D., Stony Brook University, 2006; 2011. Igneous petrology, planetary, petrology, geochemistry.

Ishman, Scott E., Professor, Ph.D., The Ohio State University, 1990; 1999. Paleocology, Cenozoic paleobiology, foraminifera.

Lefticariu, Liliana, Associate Professor, Ph.D., Northern Illinois University, 2004, 2007. Isotope geochemistry, environmental geochemistry.

Marzolf, John E., Associate Professor, *Emeritus*, Ph.D., The University of California, Los Angeles, 1970; 1982.

Potter-McIntyre, Sally, Assistant Professor, Ph.D., University of Utah, 2013; 2013. Sedimentology and Stratigraphy.

Rimmer, Sue, Professor, Ph.D., Pennsylvania State University, 1985; 2009. Coal geology and petrology, source-rock geochemistry.

Sexton, John L., Professor, Ph.D., Indiana University, 1974; 1985. Geophysics, seismic reflection and refraction.

The Department of Geology offers programs leading to the Master of Science degree (thesis required), a Master of Arts degree in Earth Sciences (thesis not required), a Graduate Certificate in Earth Sciences, and a Doctor of Philosophy degree in Geosciences. Students may also pursue a Doctor of Philosophy degree in the geological sciences under the auspices of the interdisciplinary doctoral program in *Environmental Resources and Policy* (ER&P). For details, refer to the Environmental Resources and Policy entry in this catalog.

All graduate programs require a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Geology. Applicants must pay this fee online by credit card.

Graduate Programs

The objectives of the graduate degree programs are to develop the student's competence in the basic fields of earth science and to provide for specialization dependent on student and faculty interest. Facilities and staff are available for studies involving

environmental geology, geomorphology, hydrogeology, paleontology, micropaleontology, paleoecology, coal petrology, coal geology, Pleistocene geology, environmental geochemistry, molecular organic geochemistry, solid earth geophysics, environmental geophysics, applied geophysics, geographic information systems, remote sensing, surface and subsurface mapping, structural geology, stratigraphy, sedimentation, sedimentary petrology, sedimentary environments, ore deposits, petrology, mineralogy, crystallography, energy resources, and petroleum geology. Many of the faculty are actively conducting research in which statistical and computer techniques are applied to problem solving in the earth sciences. Interdisciplinary research with other departments is encouraged.

SIU Geology faculty and graduate students conduct internationally-recognized research all over the globe. In North America, there are current and recent research efforts in locations ranging from Alaska to Florida, from Nova Scotia to the Sonoran Desert. Farther afield, SIU Geology researchers are active in Antarctica, Asia, South America, South Africa, and Europe. The Southern Illinois region itself offers a wide variety of geological conditions ideal for individual study and research.

Students must be admitted unconditionally to the Graduate School before they can be officially admitted to the graduate program in geology. Admission to the graduate program in geology is based on an evaluation of the preparation, ability, and promise of the applicant. Prerequisites for admission include: 1) receipt of GRE test scores sent directly to the Department of Geology; 2) completion of the online application; and 3) receipt of at least three letters of recommendation from professors, academic advisers, former employers, or others familiar with the applicant's academic performance, research, or other relevant work. The Department of Geology normally admits graduate students for entrance in the fall semester; however, applicants will be considered for spring admission.

A student admitted with course deficiencies may be required to complete or audit some undergraduate courses. First year teaching assistants are required to enroll in and complete GEOL 500. Other specific requirements will be determined by the student's advisory committee. Students are evaluated on an individual basis, their programs are determined by their career goals and the results of informal interviews with individual faculty members.

Requirements for the Master of Science Degree (Thesis Option)

- A total of 30 hours of graduate work completed with a grade point average of 3.0 or better constitutes the minimum credit requirement for the master's degree.
- Courses taken are determined by the student and an advisory committee. The student will not be allowed to apply more than 8 hours of independent study or research courses toward the master's degree (exclusive of thesis credits).
- A student majoring in geology may select a minor field. The minimum course work should then include 20 hours of geology and 10 hours in the minor field.
- A thesis subject must be approved by the chair of the

advisory committee at least 20 weeks before the date of graduation.

- A final oral examination, primarily concerned with defense of the thesis is administered as the last step before graduation. The student may be asked any questions the committee feels are relevant.
- In order to pass the final oral examination, students must receive a favorable majority vote from their thesis committee meeting in formal session. Should the student fail the final oral examination, the student, upon concurrence of a majority of the committee, may arrange a time for a re-examination not less than 30 nor more than 120 days after the first examination. Students who fail the final orals on their second attempt will be ineligible for the master's degree from the Department of Geology.
- Two copies of the approved thesis must be presented to the Graduate School at least three weeks prior to graduation, and a third copy must be presented to the Department of Geology.

Requirements for the Master of Arts Degree in Earth Sciences

The Master of Arts Degree in Earth Sciences is open to post baccalaureate students with degrees in earth science, geology, or related fields. Two fields of concentration are available: *Geospatial Analysis* and *Environmental Geology*. It is intended to expand the knowledge, skills, and specialized training in geological topics. The courses taken will be determined by interests of the individual student, but must be approved by the student's three-person departmental advisory committee. At least three (3) credits of GEOL 591 Individual Research in Geology must be taken.

Recommended Courses for the Geospatial Analysis

Concentration:

- GEOL 420 (3) Petroleum Geology
- GEOL 428 (3) Paleocology and Environments of Deposition
- GEOL 434 (3) Engineering and Environmental Geophysics
- GEOL 435 (3) Solid-Earth Geophysics
- GEOL 466 (3) Tectonics
- GEOL 474 (3) Geomorphology
- GEOL 476 (3) Quaternary Geology
- GEOL 478 (3) Advanced Environmental Geology
- GEOL 481 (3) Sedimentary Basin Analysis
- GEOL 484 (3) Geologic Remote Sensing
- GEOL 526 (3) Advanced Topics in Applied Paleocology
- GEOL 535 (3) Advanced Topics in Geophysics
- GEOL 536 (3) Earthquake Seismology
- GEOL 538 (3) Gravity and Magnetism
- GEOL 576 (3) Coastal Geomorphology and Sedimentology
- GEOL 577 (3) Advanced topics in Surficial Geology
- GEOL 578 (3) Fluvial Geomorphology
- GEOL 579 (3) Soil Geomorphology

- GEOL 591 (3) Individual Research in Geology
- GEOG 418 (3) Introduction to Geographic Information Systems
- GEOG 420 (3) Advanced Geographic Information Systems

Recommended Courses for the Environmental Geology

Concentration:

- GEOL 417 (3) Isotope Geochemistry
- GEOL 418 (3) Low Temperature Geochemistry
- GEOL 421 (3) Organic Geochemistry
- GEOL 420 (3) Petroleum Geology
- GEOL 428 (3) Paleocology & Environments of Deposition
- GEOL 434 (3) Engineering and Environmental Geophysics
- GEOL 470 (3) Hydrogeology
- GEOL 470 (3) Hydrogeology Laboratory
- GEOL 474 (3) Geomorphology
- GEOL 476 (3) Quaternary Geology
- GEOL 478 (3) Advanced Environmental Geology
- GEOL 481 (3) Sedimentary Basin Analysis
- GEOL 484 (3) Geologic Remote Sensing
- GEOL 517 (3) Advanced Topics in Geochemistry
- GEOL 526 (3) Advanced Topics in Applied Paleocology
- GEOL 527 (3) Micropaleontology
- GEOL 576 (3) Coastal Geomorphology and Sedimentology
- GEOL 577 (3) Advanced Topics in Surficial Geology
- GEOL 578 (3) Fluvial Geomorphology
- GEOL 579 (3) Soil Geomorphology
- GEOL 591 (3) Individual Research in Geology
- GEOG 418 (3) Introduction to Geographic Information Systems
- GEOG 420 (3) Advanced Geographic Information Systems

Graduate Certificate

The Certificate in Earth Science with an optional concentration in Geospatial Analysis or Environmental Geology is open to post baccalaureate students with degrees in earth science, geology, or related fields. It is intended to expand the knowledge, skills, and specialized training in geological topics. The course work will include eighteen (18) graduate credit hours in Geology. While there are no specific courses required, the courses taken will be determined by the student and the departmental Coordinating Committee. For the concentrations in Geospatial Analysis and Environmental Geology, please refer to the recommended course lists above for the Non-Thesis Master's program.

Students must maintain a *B* average in graduate courses and must follow the rules of the Certificate Policy established by the Graduate School. Maximum time allowed to complete the requirements for the certificate is five years.

Requirements for the Doctor of Philosophy Degree in Geosciences

The primary objective of the doctoral program in Geosciences is to develop a student capable of successfully conducting original research and the presentation of an acceptable

dissertation describing the results, analysis, and implications of that research. To achieve this goal, the student must meet the criteria established by the University, the Graduate School, and the faculty participating in the doctoral program in Geosciences. The program of study will be flexible, to allow students to take courses offered by departments within the College of Science, and across campus. Each student is expected to take graduate level courses (excluding readings, independent studies, and internship) of at least 3 credits each from at least four different faculty members at SIU. The program requires a minimum of 48 semester hours, 24 of which may be 600-level dissertation credits.

Before the end of their second year in the program, students shall have (1) established an advisory committee including their dissertation adviser and four additional members (any member of the graduate faculty in the University can serve on the committee, but at least one member must be from a department other than the Department of Geology); (2) demonstrated competence in at least one research tool (the student's advisory committee will determine the requirements and research tool competence); and (3) presented themselves to the advisory committee for a comprehensive written and oral examination. At this time, the student must also select from one of the program concentrations:

- Biogeochemistry
- Earth Surface Processes
- Energy and Mineral Resources
- Geophysics and Tectonics
- Paleobiology

The format of the comprehensive examinations shall be established by the faculty participating in the doctoral program in Geosciences. Students who fail the comprehensive examinations and wish to remain in the program may, with faculty consent, retake the examinations. Students who fail the second written-oral examination will be dropped from the program. After successful completion of the comprehensive exams, the student must prepare and defend a dissertation proposal. If a student successfully defends the dissertation proposal, he or she is admitted to candidacy for the Ph.D. degree. The comprehensive examinations and dissertation proposal defense are part of the formal assessment process.

As a candidate for the degree of Doctor of Philosophy in Geosciences, the student is expected to make normal progress toward the successful completion and presentation of original research. Ordinarily, the doctoral student should expect to spend a minimum of two years beyond the Master's degree, or its equivalent, in residence. Students will be required to present an acceptable dissertation describing original research performed with minimal supervision and deemed by the advisory committee to be of such quality as to merit publication in appropriate professional journals. A final oral examination will be held after completion of the doctoral dissertation. This examination will concentrate on the defense of the dissertation but is not restricted to the dissertation topic or area. The dissertation will be accepted provided the dissertation advisor and at least three of the other four members of the committee so agree.

Degree requirements, graduation, and time limits are subject

to the general guidelines of the Graduate School.

Environmental Resources and Policy Doctoral Program

The central focus of the Environmental Resources and Policy Ph.D. is advanced interdisciplinary training and research on geological, physical, biological, and social processes responsible for natural resource and environmental problems facing contemporary society. Additionally, the ER&P Ph.D. focuses on assessing public policy alternatives to address those problems and create new opportunities.

Within the broad and flexible ER&P framework, a customized program is developed for each student, permitting him/her to conduct research in traditional and non-traditional earth science sub disciplines, under the direction of one or more Geology faculty members. The program is jointly guided by the Department of Geology, the Department of Geography and Environmental Resources, and the College of Agricultural Sciences (Departments of Agribusiness Economics; Forestry; and Plant, Soil, and Agricultural Systems), with support from the School of Law, the College of Engineering, other key faculty at SIU, and State of Illinois environmental agencies. Please see the Environmental Resources and Policy section of this catalog for detailed information and admission procedures.

Assistantships

Teaching assistantships are awarded and supervised by the Department of Geology. Research assistantships are usually available only from research grants of individual faculty members and are supervised by the faculty member in receipt of the sponsoring grant. Research assistantship awards require prior approval of the assistantship committees of the department. Students in the Geology Master of Science program, the Geosciences Ph.D. Program, and the Environmental Resources and Policy Ph.D. program are eligible to apply for teaching and research assistantships from the Department of Geology.

As a matter of policy, the Department of Geology does not ordinarily provide any student working on a master's degree financial support for more than two years, or four years for doctoral students. Requests for relaxation of this policy must be made in writing to the department chair.

Courses (GEOL)

Courses with a laboratory may require purchase of a laboratory manual and a supply fee. All courses requiring field trips may have a field trip fee.

405-2 Science Writing and Scientific Communication. Course will teach "survival skills" in scientific reading, writing, communicating, and publishing for new graduate students. Topics will include database search, analysis of journal articles, abstracts, figures and tables, PowerPoint presentations, proposals, posters, thesis writing, and preparation of journal submissions. Enrollment is open to graduate students in the sciences and is by permission of the instructor.

411-3 Volcanology. Study of volcanoes, their distribution, forms, composition, eruptive products and styles of potential hazards. Relationship of magmatic characteristic, eruptive style, and depositional products to the geologic frame-work is examined. Prerequisite: GEOL 315.

412-3 Advanced Petrology. In-depth study of the rock forming processes. The relations of rock forming processes to petrographic analysis will be emphasized. Laboratories will deal with hand-specimen and thin-section analysis from selected rock suites with genetic modeling of the resulting data. Prerequisite: GEOL 310, 315.

413-3 Quantitative Methods of Geology. An introduction to quantitative methods in a geological and earth sciences context. Topics introduced include sampling plans for geologic studies, non-parametric test of geological data, comparisons of geological samples, analysis of sequential geological data. Laboratories will deal with numerical examples from all areas of geology. Restricted to advanced standing. Special approval needed from the instructor.

415-3 Optical Mineralogy. The optical properties of minerals and the use of the petrographic microscope for identification of crystals by the immersion method and by thin-section. Lecture, laboratory. Prerequisite: GEOL 310, Physics 203b or 205b.

416-3 The Geochemistry of Natural Waters. The purpose of this class is to provide students with a strong theoretical background in aqueous geochemistry, environmental geochemistry, and groundwater geochemistry for application in a wide range of research topics. The approach combines conceptual knowledge with quantitative skills in cyclic fashion to build independent understanding and chemical intuition. Prerequisites: GEOL 310, CHEM 200, 201, 210, 211 or consent of instructor. Lab Fee: \$15.

417-3 Isotope Geochemistry. Isotope fractionation in natural systems containing D/H, carbon, oxygen, nitrogen, and sulfur. Application of stable isotope studies to environmental processes, paleoclimatology, and geothermometry. Stable and radioactive isotopes as tracers in hydrologic processes, ore deposits, sedimentology, and in crust-mantle differentiation processes. Prerequisite: GEOL 310, CHEM 200, 201, 210, 211 or equivalent.

418-3 Low Temperature Geochemistry. The application of chemical principles to geologic processes that occur on and near the earth's surface. Lecture, laboratory. Prerequisite: 310, CHEM 200, 201, 210, 211 or equivalent.

419-3 Ore Deposits. Overview of the occurrence, geology and origin of metalliferous mineral deposits. Geologic principles and research techniques important to the understanding of mineral deposits. Introduction to exploration and mining methods. Lectures, laboratories, and field trips required. Prerequisite: GEOL 302, 315 or consent of instructor. Field trip fee not to exceed \$60. Lab fee: \$5.

420-3 Petroleum Geology. The geological occurrences of petroleum including origin, migration and accumulation; a survey of exploration methods, and production problems and techniques. Laboratory study applies geological knowledge to the search for and production of petroleum and natural gas. Prerequisite: GEOL 221, 224.

421-3 Organic Geochemistry. The nature, origin and fate of natural and artificial organic materials in rocks and sediments. Topics include characterization of fossil fuels using biological marker compounds, petroleum source rock evaluation, and organic pollutants in the environment. Prerequisite: GEOL 325 or consent of instructor.

425-3 Invertebrate Paleontology and Paleocology. (Same

as ZOO 425) Concepts of paleontology and paleocology. Emphasis on functional morphology, lifestyles and habitats of fossil invertebrates and algae. The nature and evolution of marine and coastal paleocommunities. The effects of extinction events on paleocommunities and biodiversity. Laboratory. Up to 3 one- or two-day field trips may be required on weekends. Field trips required. Field trip fee not to exceed \$199. Lab fee: \$5. Prerequisite: GEOL 325 or a life science course.

428-3 Paleocology and Environments of Deposition. Characteristics, distribution, and classification of recent and ancient environments. Criteria for recognizing ancient environments. Sedimentological and paleoecological approaches. Recognition of ancient environments and environmental associations. Laboratory. Field trips required. Prerequisite: GEOL 425, 325, or concurrent enrollment. Field trip fee not to exceed \$199.

430-3 Planetary Geology. Study of the solar system and planet formation, focusing on formation, differentiation and secondary processes. Geologic histories and geological processes of other planets are examined and compared with our understanding of the Earth. Prerequisite: GEOL 310.

435-3 Solid-Earth Geophysics. Earth's size, shape, mass, age, composition, and internal structure are reviewed in detail as understood from its volcanism, gravity and magnetic fields, seismicity and motion of continents and ocean basins; plate tectonics. Up to 3 one- or two-day field trips may be required on weekends. Prerequisite: GEOL 302, Mathematics 150 or consent of instructor.

436-3 Applied Geophysics. Theory and practice of geophysics applied to exploration for natural resources including oil, minerals, coal, groundwater, and for archaeology, environmental, and meteorite impact sites and earthquake zones. Methods include seismic reflection, refraction, and surface waves also gravity, magnetic, and electric. Up to 3 one-day field trips may be conducted on weekends. Recommend: GEOL 220 or 222, PHYS 203A/B or PHYS 253A/B. Prerequisite: MATH 150. Field trip fee not to exceed \$80.

437-3 Field Course in Geophysics. Use of geophysical equipment for collection, analysis and interpretation of seismic, gravity, magnetic, electrical and other types of geophysical data. Field trips required. Prerequisite: GEOL 436 or consent. Field trip fee not to exceed \$199. Lab fee: \$10.

440-1 to 8 Advanced Topics in the Geological Sciences. Individual study or research or advanced studies in various topics. Restricted to advanced standing. Special approval needed from the instructor.

445-3 Museum Studies in Geology. History, nature and purpose of geology in museums, relationships of geology to other museum disciplines, application of geologic methods to museum functions, preparation and preservation of specimens; nature, acquisition and utilization of geologic collections in museums; role of research in museums.

451-1 to 12 Field Experience in Geology. Preparation for and participation in academically rigorous field trips guided by faculty members. Trips will be to areas of geological interest and will occur during official breaks within or between semesters. Expenses will vary in proportion to the distance traveled and duration of trip and will be determined before each trip. A student may only take a specific trip once for credit. Special

approval needed from the instructor.

466-3 Tectonics. Fundamentals of geodynamics applied to plate technologies: mantle composition and rheology, deformation of the lithosphere, structural characteristics of plate margins, stability of triple junctions, diachronous tectonics, and orogenesis will be examined in detail. One 3-day field trip is required. Expense will vary in proportion to distance traveled and locations visited and will be determined before each semester. Field trip fee not to exceed \$150. Prerequisite: GEOL 302, MATH 150, or consent.

470-3 Hydrogeology. Study of the distribution, origin and movement of groundwater and the properties of geologic materials that control groundwater flow and contaminant transport. Geology majors must also take 471 concurrently. Prerequisite: GEOL 220 or 222; or consent of instructor.

471-1 Hydrogeology Laboratory. Problem sets, laboratory experiments, and field exercises in hydrogeology. Majors must take concurrently with GEOL 470. Field trips required. Prerequisite: GEOL 220 or 222; or consent of instructor. Field trip fee not to exceed \$150.

474-3 Geomorphology. Study of erosional and depositional processes operating at the earth's surface and landforms resulting from these processes. Relationship of processes and landforms to the geologic framework is examined. Laboratory. Field trips required. Field trip fee not to exceed \$60. Prerequisite: 220 or 222; 223.

476-3 Quaternary Geology. Methods used to identify, map, date and correlate Quaternary deposits and interpret Quaternary history. Covers glacial, fluvial, coastal, lacustrine and eolian chronologies, oxygen isotope records from ocean sediments and continental ice cores, volcanic activity and Quaternary climate change. Field trips required. Prerequisite: 220 or 222; 223, 221, 224; or consent of instructor; 474 recommended.

478-3 Advanced Environmental Geology. Application of principles of geomorphology and Quaternary to environmental problems and geologic hazards. Lectures and case studies emphasize neotectonics, volcanic hazards, landslides and other mass movements, floods, river channel changes, and coastal erosion. Prerequisites: GEOL 220, GEOL 223. Field trips required. Field trip fee not to exceed \$60.

480-3 Geology of Coal. Stratigraphy, sedimentation and structure of coal deposits; modern analogs; origin of splits and partings in coal seams; coal quality and rank; coal exploration and mining; methods of resource evaluation. Prerequisite: GEOL 220 or 222; 221, 223, and 224.

481-3 Sedimentary Basin Analysis. The use of stratigraphy, structure, sedimentology and geophysics to determine the paleogeographic evolution of sedimentary basins. Topics include the study of the relationships between host strata and both primary and post-depositional non-renewable resources, plate tectonics and basin evolution and subsurface geologic methods. Special approval needed from the instructor. Lab fee: \$10.

482-3 Organic Petrology. Petrology and geochemistry of coals and dispersed organics; emphasis on applications to the coal and oil industries; origin of coal and source rock constituents; geochemical and petrographic changes with increased maturation. Prerequisite: GEOL 220 or 222; 223, 221, 224.

483-3 Forensic Geology. An introduction to the use of geological materials and techniques in criminal investigation.

Details from actual criminal cases will be used as examples in all the topics covered which include rock and mineral types, geological and topographic maps, fossils, sand, soils, spores and pollen, geological building materials, art fraud and gemstones. Techniques covered will include optical microscopy, scanning electron microscopy, and x-ray diffraction. Lab fee: \$10.

484-3 Geologic Remote Sensing. Applications of remote sensing using aerial photographs, multi-spectral imagery, hyperspectral imagery, thermal infrared imagery, and radar imagery, in structural geology, stratigraphy, geomorphology, oil and mineral exploration, geologic hazard analysis, and planetary exploration. Prerequisite: 220 or consent of the instructor. Lab fee: \$25.

500-1 to 2 Teaching for Geology Graduate Students. To help teaching assistants develop skills in conducting laboratory work and leading discussions. One hour required for all teaching assistants in geology. Graded *S/U* only.

510-2 Advanced Sedimentology. Basic principles of field observation, field and laboratory sampling, and data analysis of clastic sedimentary rocks; introduction to laboratory techniques; introduction to statistical, physical and empirical models in sedimentary geology. Field trips required. Prerequisite: GEOL 325 or GEOL 474.

513-3 Quantitative Methods in the Earth Sciences. An introduction to quantitative methods in an Earth Sciences context. Topics include sampling plans for geologic studies, non-parametric tests of geological data, comparisons of geological samples, analysis of sequential geological data. Course will deal with numerical examples from different areas of geology. Special approval needed from the instructor.

515-3 Instrumental Analysis in Geology. An introduction to modern methods of instrumental inorganic geochemical analysis that are particularly important in the geology sciences. This includes both operational theory and practical application of methods for the analysis of minerals, rocks and aqueous solutions. Lecture, laboratory. Prerequisite: GEOL 310, CHEM 210 or equivalent; 418 recommended.

517-2 to 9 (2 to 6 per semester) Advanced Topics in Geochemistry. Specialized topics in geochemistry. Topics covered might include thermodynamic modeling of mineral-solution equilibria, the role of kinetics in mineral-solution reactions, experimental hydrothermal geochemistry or other topics to be announced by the department. Maximum credit nine semester hours. Prerequisite: GEOL 418 or consent of instructor.

518-3 Clay Mineralogy. Study of the structure, chemistry, origin, and geologic importance of clay minerals. Industrial and other applications of clays. Lecture, laboratory. Prerequisite: GEOL 310 or consent.

520-2 to 9 (2 to 6 per semester) Advanced Topics in Igneous and Metamorphic Petrology. Petrologic principles and their relationships and other selected topics to be announced by the department. Special approval needed from the instructor.

522-3 Sedimentary Petrology-Siliciclastics. The petrography and petrology of siliciclastic rocks, emphasizing sandstone. Microscopic studies of composition and components of detrital clastic rocks, their origin, provenance, characteristics, diagenesis, cementation and lithification. Special approval needed from the instructor.

523-3 Sedimentary Petrology—Carbonates. The origin, classification, diagenesis, and geochemistry of carbonate rocks, with emphasis on petrographic analysis. Study of recent carbonate depositional environments. Laboratory required. Prerequisite: GEOL 325; GEOL 418 recommended.

524-2 to 9 (2 to 6 per semester) Advanced Topics in Sedimentary Geology. Topics may include clastic depositional environments, carbonate depositional environments; diagenesis of sedimentary rocks, and other topics to be announced by the department. Up to 3 one- or two-day field trips may be required on the weekends. Special approval needed from the instructor.

525-2 to 6 (2 to 3 per semester) Advanced Topics in Invertebrate Paleontology. Lectures, readings, field and laboratory studies, including techniques and quantitative methods of study. Preparation for research in paleontology. Topics may include corals, bryozoans, brachiopods, mollusks, echinoderms, biostratigraphy, tempo and mode of invertebrate evolution and other topics to be announced by the department. Maximum credit six semester hours. Prerequisite: GEOL 425 or consent of instructor.

526-3 Advanced Topics in Applied Paleocology. Lectures, field, and laboratory studies, including techniques and quantitative methods. Preparation for research in paleocology. Emphasis on using fossil marine invertebrates and trace fossils to interpret ancient sedimentary environments. Prerequisite: GEOL 428 or consent.

527-3 Micropaleontology. Structure, classification, paleocology, stratigraphic distribution, and evolution of microfossils. Laboratory work in techniques of collection, preparation and study of microfossils. Identification and use of microfossils in solving stratigraphic and paleoenvironmental problems. Preparation for research in micropaleontology. Field trips required. Prerequisite: GEOL 425 or consent of instructor. Field trip fee: \$85.

535-1 to 9 (1 to 6 per semester) Advanced Topics in Geophysics. Specialized topics in geophysics. Examples include but are not limited to seismic stratigraphy, mid-continent seismicity, isostasy, data processing techniques. The topic to be covered is announced by the department. Maximum credit nine semester hours. Up to 3 one- or two-day field trips may be required on weekends. Prerequisite: GEOL 435 or GEOL 436 or consent of instructor.

536-3 Earthquake Seismology. Observational seismology. Topics include earthquake source mechanisms; propagation, reflection and refraction of elastic waves; ray theory; dispersion of surface waves; the effect of earth structure on the seismogram; and the seismograph. Research projects will be conducted using data from the SIU Geophysical Observatory. Up to 3 one- or two-day field trips may be required on weekends. Prerequisite: GEOL 435 or GEOL 436, MATH 150 or consent of instructor.

537-3 Applied Seismology. Study of the seismic reflection techniques, including theory and methods of collection and analysis of seismic reflection data, the seismic method, waveform analysis, and digital filtering with computer applications and seismic instrument characteristics. Up to 3 one- or two-day field trips may be required on weekends. Prerequisite: MATH 150 or consent.

538-6 (3,3) Gravity and Magnetism. (a) Gravity. Study of gravitational methods used in the solution of geological

problems; topics include theory, field operations, data reduction, anomaly separation, two and three-dimensional analysis, and interpretation. Up to 5 one- or two-day field trips may be required on the weekends. **(b) Magnetism.** Study of magnetic methods used in the solution of geological problems; topics include theory, origin, time variations and induction, paleomagnetism, magnetic properties of earth materials. Field operations, anomaly separation, and interpretation. Up to 5 one- or two-day field trips may be required on the weekends. Prerequisite: 435 or 436, MATH 150 or consent of instructor.

550-4 Advanced Economic Geology. In-depth examination of the geologic characteristics, classification and origin of metallic mineral deposits. Aspects of mineral exploration and mining techniques are also discussed. Laboratory exercises emphasize hand specimen and petrographic study of ore and host rock suites. Up to 3 one- or two-day field trips may be required on weekends.

555-1 to 6 (1 to 3 per semester) Advanced Topics in Economic Geology. Advanced study in a specific area of economic geology to be determined by course participants. Course content may focus on a specific type of mineral deposit or such topical areas as field characteristics, mineral exploration techniques, stable isotope geochemistry, fluid inclusion studies and hydrothermal processes. Maximum six credit hours. Field trips may be required on up to 3 weekends and possibly over Spring vacation. Prerequisite: GEOL 550.

566-3 Advanced Topics in Structural Geology. Lectures, readings, and discussion of advanced aspects of rock deformation: dislocation theory and its applications to flow processes of rocks; experimental rock deformation; incremental and finite strain theory and analysis; and recent developments in structural geology. Special approval needed from the instructor.

570-3 Advanced Hydrogeology. A combination of lectures, seminars, and independent studies of advanced topics in hydrogeology, particularly geochemistry and the response of aquifers to stresses such as tides, recharge and saline intrusion. Prerequisite: GEOL 470.

576-3 Coastal Geomorphology and Sedimentology. Detailed examination of coastal processes and clastic coastal depositional systems. Coastal storms, wave processes, tidal systems, sea level changes, coastal sediment transport, deltaic, barrier island-strandplain, estuarine depositional systems and coastal stratigraphic sequences. Field trip to Louisiana and Texas Gulf Coast required. Prerequisite: GEOL 474 or consent of instructor. Field trip fee: \$35.

577-2 to 9 (2 to 6 per semester) Advanced Topics in Surficial Geology. Studies of processes, landforms, and deposits in the surface or near surface geologic setting. Selected topics to be announced by the department. Maximum credit nine semester hours. Special approval needed from the instructor.

578-3 Fluvial Geomorphology. Detailed study of fluvial processes and landforms within the context of major concepts in geology and geomorphology. Topics include drainage basins, hydroclimatology and surface water hydrology, channel processes, fluvial depositional systems, paleohydrology and changes in fluvial systems through time. Field trips required. Field trip fee: \$35. Prerequisite: GEOL 474. Special approval needed from the instructor.

579-3 Soil Geomorphology. Study of geomorphologic applications of soils. Covers the effects of time, climate, parent material, topography, eolian additions on soil development, classification and chemistry; soil indices; pedogenic thresholds; paleosols; use of soils to evaluate landform age, landform stability, Quaternary stratigraphy, faulting and climate fluctuations. Field trips required. Prerequisite: GEOL 474 or consent of instructor.

582-1 to 6 (1 to 3 per semester) Advanced Coal Petrology. Microscopy, source materials, coalification, constitution, and classification of peats, lignites, bituminous coal, anthracite; applications to industrial problems. Prerequisite: GEOL 482.

584-3 Advanced Geologic Remote Sensing. An advanced course covering the nature of electromagnetic radiation, the electromagnetic spectrum and the interaction between electromagnetic radiation and matter. Remote sensing systems will be presented and the fundamentals of digital image processing will be introduced from the theoretical and practical viewpoint. A series of case studies with applications ranging from mineral exploration to volcano monitoring will be covered. Field trip fee: \$40.

585-3 Earth and Space Science for Teachers. Class designed to help teachers gain an understanding of some of the earth science concepts they need to teach today's standards-based curricula. Develops an understanding of earth materials, how the earth works, earth resources, the causes of natural disasters, and the exploration of the bodies of our solar system. Prerequisites: A general physical science course or equivalent. Special approval needed from the department.

588-3 Global Energy Resources. Ready access to energy is essential to sustaining modern societies. This course will discuss the nature of the resources that have been, are, or potentially could be used to provide energy in the US and around the globe, including fossil fuels, nuclear energy resources, bioenergy resources and emerging energy resources such as geothermal, wind, tidal, and solar energy.

591-1 to 6 Individual Research in Geology. Investigations in geology other than those for theses or dissertations.

599-1 to 6 Thesis (1 to 8 hours per semester). Research for and writing of the master's thesis. Maximum of six hours to be counted toward a Master's degree.

600-1 to 30 (1 to 16 per semester) Dissertation. Research for and writing of the doctoral dissertation. Special approval needed from the instructor.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Gerontology

<http://ehs.siu.edu/gerontology/>

jonathan.c.baker@siu.edu

Certificate in Gerontology

The Graduate Certificate in Gerontology is open to post-bachelor level students who are interested in the area of gerontology. It is designed to provide knowledge, skills, and specialized training in programs and services for older persons. The certificate includes core courses on aging in the following areas: social work, rehabilitation, health, exercise and education. Courses within the certification program will include, but not be limited to: policy and program issues, psychosocial issues and health and fitness issues. The coursework also includes a practicum in an agency suitable to the individual's interest OR research project. Students must complete 18 semester hours of study including a minimum of three hours of practicum/research, to earn the certificate.

For more information contact:

Dr. Julianne P. Wallace, Coordinator, Certificate in Gerontology

College of Education and Human Services

Southern Illinois University

Mail Code 4310

Carbondale, IL 62901

Telephone: 618-453-3133

E-mail: siucgerontology@siu.edu

Courses (GRON)

There is no approved graduate program in Gerontology.

Four-hundred-level courses may be taken for graduate credit unless otherwise indicated in the course description.

402-3 Death Education. (Same as HED 402) Designed to prepare educators to conduct learning experiences about death and dying in a variety of school, college, medical care, and community settings. Stress will be placed on developing brief, functional curricula and usable, imaginative, teaching-learning materials and on evaluating resource materials for use in educating at various levels of maturity.

405-3 Introduction to Aging and Rehabilitation. (Same as REHB 405) Introduction to the field of aging. Including social, political, economic and legal issues pertinent to an aging society and rehabilitation.

428 Physical Activity and Exercise for Older Adults. (Same as KIN 428) This course is designed to introduce the student to physical changes of the older person with reference to activity and exercise and to teach the student about rational activity and exercise programs for the older person with consideration of the care and prevention of typical injuries that may occur with such programs.

440-3 Health Issues in Aging. (Same as HED 440) Course content includes demographic trends: physiological changes associated with aging; health care and consumer challenges; cultural differences; psychological effects of aging; housing; long-term care; retirement; care giving; and formal, informal, and community-based support systems.

440C-3 Therapeutic Recreation for Older Adults. (Same as REC 440C) Students will examine problems and characteristics

of individuals with various disabilities. Emphasis is upon the role of therapeutic recreation with these specific populations in institutional and community settings. **(c)** therapeutic recreation for the aged. Prerequisites: REC 300, REC 301, REC 302, REC 304, or consent of instructor.

446-3 Psychosocial Aspects of Aging. (Same as REHB 446) Selected theories of psychosocial aspects of aging will be presented and the psychosocial and sociological processes of aging with the ensuing changes will be related to these conceptual frameworks. Included for discussion and related to field experience will be such concerns as stress reactions to retirement, physical disabilities, impact of reduced economic resources, and other personal-social changes in aging. Topics will address the knowledge base needed by students concerned with rehabilitation of aging clients in institutional, community and home settings. Therapeutic techniques to ameliorate these stresses will be an integral part of the course.

500-1 to 3 Seminar in Gerontology. This course is designed to provide a multidisciplinary conceptual framework for the study of Gerontology and to assist Gerontology students to develop the skills and knowledge needed to understand major issues in theory, research, and practice. This course is designed to familiarize the student with the process of critical reading of Gerontological research from multiple disciplines to solve practical problems.

505-3 Behavioral Gerontology. (Same as REHB 505) This course examines the application of behavioral principles to problems associated with aging such as deficits in the activities of daily living and social skills, wandering, aggression, incontinence, depression, anxiety, and dementia among others. Environmental redesign and alternative performance strategies will also be addressed. Behavioral training and supervision of staff members who work older individuals is also presented. Special approval needed from the instructor.

517-3 Aging, Memory, and Cognition. (Same as PSYC 517) A detailed survey of current methodology, research and theory dealing with cognitive and memory processes in later adulthood. Topics covered include attention, memory, reasoning and problem solving, language processing and interference and age-associated pathologies affecting cognition and memory. Special approval needed from the instructor.

555-3 to 6 Practicum/Research in Gerontology. The practicum or research project in the Graduate Certificate in Gerontology is designed as a culminating experience directly related to the students' intended employment or area of interest. It will, therefore, normally be taken after the predominance of course work is completed. The practicum/research experience may be completed in any appropriate setting as judged by the Gerontology Advisory Board and faculty associated with the area of Gerontology. Graded S/U only.

559-3 Aging and Mental Health. (Same as SOCW 559) Examination of the nature and etiology of mental health problems facing older Americans. Review of research reports to build a theoretical basis for mental disorders.

575-3 Policy and Program Issues of Aging. (Same as SOCW 575) Examination of public policies that impact on the quality of life of the elderly. Major programs are identified and analyzed. Future policy issues are discussed.

Health Education

<http://ehs.siu.edu/her/>

herec@siu.edu

COLLEGE OF EDUCATION AND HUMAN SERVICES

Graduate Faculty:

Birch, David A., Professor, *Emeritus*, Ph.D., Pennsylvania State University, 1990; 2001.

Drolet, Judy C., Professor, *Emerita*, Ph.D., University of Oregon, 1982; 1982.

Fetro, Joyce V., Professor, *Distinguished Teacher, Emerita*, Ph.D. Southern Illinois University Carbondale, 1987; 1997.

Kittleson, Mark J., Professor, *Emeritus*, Ph.D., University of Akron, 1986; 1989.

Lacey, Ella P., Associate Professor, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1979; 1979.

Miller, Kim H., Associate Professor, Ph.D., Southern Illinois University Carbondale, 2000; 2012. Physical activity, health behavior and motivation theory, program planning.

Ogletree, Roberta J., Professor, H.S.D. Indiana University, 1991; 1991. School and college health education, curriculum development, women's health, human sexuality education, professional preparation, health issues and aging.

Ratnapradipa, Dhitinut, Associate Professor and Director of Graduate Studies, Ph.D., University of Utah, 2001; 2008. Environmental Health, epidemiology, public health.

Ritzel, Dale O., Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1970; 1966.

Welshimer, Kathleen J., Associate Professor, Ph.D., University of North Carolina at Chapel Hill, 1990; 1990. Community organizing, women's and children's health, health psychology, community assessment and planning process.

Wilken, Peggy, Clinical Assistant Professor, Ph.D., Southern Illinois University, Carbondale, 1995; 1998. First aid and advanced first aid concepts, environmental health, sexuality, international health, emotional health and aging.

Zunich, Eileen M., Assistant Professor, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1970; 1967.

The Health Education program offers a graduate program leading to either a Ph.D. in Education with an emphasis in Health Education, a Master of Public Health (MPH) in Community Health Education, a Master of Science in Education in Health Education, or a concurrent MPH/PhD in Health Education/Community Health Education. Persons interested in pursuing any of these degrees should initially consult the director of graduate studies regarding appropriate courses and assignment to an adviser.

Application/Admission. Requirements for admission to the doctoral or master's degree programs in health education are:

1. Completion and submission of Graduate School admission application; a nonrefundable \$65.00 application fee must be submitted with the application for those applying for the Doctoral of Philosophy in Education degree, Master of Sciences in Education degree, the Master of Public Health degree, or the concurrent MPH/PhD program. Applicants must pay this fee by credit card.

2. Submission of three recommendation forms (available online at <http://app.applyyourself.com/?id=siugrad>).

3. Submission of **all** official transcripts for previous undergraduate and graduate work.

4. Submission of supplemental essays.

Application deadline for summer and fall admission is the last day of February. The MPH, Ph.D., and MPH/PhD only accept candidates for summer/fall admission. Exceptions to these dates may be considered. Contact the graduate director for more information.

Doctor of Philosophy Degree in Education

The Health Education program participates in the doctoral program with a concentration in health education. Other than general requirements of the Graduate School for all Ph.D. degrees, and of the College of Education and Human Services for all Ph.D. degrees in education, the program requires satisfactory completion of HED 500, 510, 515, 525, 533a, 533b, and 597-2. Programs are individually developed with each student. Successful completion of QUAN 505, QUAN 506, EAHE 587, and one additional course in quantitative or qualitative methods is required for fulfillment of the research tool for students in the Health Education program. A *B* average is required in the four method courses.

See the description of the Ph.D. degree in education in this chapter for further details.

Inquiries regarding application should be directed to the director of graduate studies of the Department of Health Education and Recreation.

Master of Public Health Degree

Applicants for the Master of Public Health degree must have a 3.00 undergraduate grade point average (*A* = 4.0) to be admitted in good standing.

Only graduate level courses taken after a student's admission to the program will be included automatically in the student's degree program. "Nondeclared" hours or hours from other degree programs must be petitioned into the program. Courses eligible for inclusion in a degree program must be graduate level and cannot have been applied toward another degree. Fall admissions only.

Master of Public Health Degree Requirements

A student must complete a minimum of 42 semester hours with the following core courses (39 hours) being required:

HED 500-3	Community Organization
HED 505-3	Introduction to Public Health
HED 512-3	Public Health Program Planning
HED 525-3	Health Behavior and Health Education
HED 526-3	Research and Evaluative Approaches to Health Education
HED 532-3	Public Health Administration
HED 583-3	U.S. Health Systems: Organization, Delivery, and Policy
HED 588-3	Current Issues in Environmental Health
HED 590-6-9	Practicum in Community Health
HED 593-3	Epidemiology
HED 598-3	Grant Writing
QUAN 402-3	Basic Statistics

Each student will work with an advisor to select an additional 3 hours from courses within Health Education or related courses. All MPH students who are not already certified must take the Certified Health Education Specialist (CHES) exam during the semester of their practicum experience.

Concurrent MPH / PhD:

Candidates may apply for the concurrent MPH/PhD program in health education. Students will earn an MPH in Community Health Education and a PhD in Education, with a concentration in health education. Students will be selected for the program through a competitive process. Coursework has been carefully selected and sequenced for students to complete both degrees in a timely manner. This concurrent degree program is intended for students who desire to teach at the university level and for those who desire full-time student status.

Requirements for Admission:

Besides the current admission criteria, students who are interested in applying to the Concurrent MPH/PhD program must have the following:

- GPA overall 3.5 as undergraduate or 3.6 masters
- GRE scores (verbal, quantitative, and analytical scores are averaged at the 75th percentile).
- Personal interview with faculty (**on campus, video conference or telephone**)
- Undergraduate degree in health education (or closely related field) and five years health-related work experience OR a graduate degree in health education (or closely related field) and three years health related work experience
- Intension to enroll as a full-time graduate student

Concurrent MPH / MD:

Applicants may apply for a concurrent degree in Medicine and Public Health. Applicants for the Master of Public Health degree must have a 3.00 undergraduate grade point average ($A = 4.0$) to be admitted in good standing. Only graduate level courses taken after a student's admission to the program will be included automatically in the student's degree program. "Nondeclared" hours or hours from other degree programs must be petitioned into the program. Courses eligible for inclusion in a degree program must be graduate level and cannot have been applied toward another degree.

Concurrent Degree Requirements

For the medical degree, all students must complete all requirements outlined by the School of Medicine.

For the MPH degree, a student must complete a minimum of 43 semester hours with the following core courses (27 hours) being required during the first year:

HED 500-3	Community Organization for Health Education or HED 512 Public Health Program Planning
HED 505-3	Introduction to Public Health
HED 525-3	Health Behavior and Health Education
HED 532-3	Public Health Administration
HED 588-3	Environmental Health
HED 583-3	US Health System
HED 593-3	Epidemiology

HED 598-3 Grant Writing

QUAN 402-3 Basic Statistics

In addition, the student must complete the following during the fifth year:

- HED 590-6 Practicum in Community Health
- 10 hours selected from the following electives:
 - Public Health Leadership elective, 3 weeks/hours, SIU-SOM
 - Clinical Epidemiology elective, 3 weeks/hours, SIU-SOM
 - Health Policy and Law elective, 3 weeks/hours, SIU-COM
 - HED 590 Practicum, 6 hours, SIU-SOM field experience with the Illinois Department of Public Health
 - Advanced Biostatistics, 2 weeks/hours, SIU-SOM
 - State Agency Management and Engagement, 1 week/hour, SIU-SOM
 - Emerging Trends in Public Health, 2 weeks/hours, SIU-COM
 - Ethical Issues in Public Health Practice and Research, 1 week/hour, SIU-SOM
 - Crisis and Disaster Response and Management, 1 week/hour, SIU-SOM
 - Roles and Integration of National, State and Local Health Agencies, 1 week/hour

Certificate in Gerontology

The Department of Health Education and Recreation participates in the Certificate in Gerontology interdisciplinary program and offers a class, HED 440 Health Issues in Aging, which is a Certificate requirement. For more information on this Certificate program, please see Certificate Programs in Chapter One of the Catalog.

Courses (HED)

402-3 Death Education. (Same as GRON 402) Designed to prepare educators to conduct learning experiences about death and dying in a variety of school, college, medical care, and community settings. Stress will be placed on developing brief, functional curricula and usable, imaginative teaching-learning materials and on evaluating resource materials for use in educating at various levels of maturity.

403-3 Health Advocate Training. Provides students with knowledge and skills in the areas of peer health education, health advocacy and referral. Instruction includes health care information from a wellness point of view. Prepares students for practicum in health advocate program. Credit will not count toward a Master's degree in health education. Special approval needed from the instructor.

407-3 Substance Use Prevention. Designed to prepare educators to plan, implement and evaluate substance use prevention programs. Emphasizes incidence/prevalence, etiology, risk factors, motivations, and short/long-term effects related to substance use. Key elements of effective prevention programs are reviewed. Meets requirements of Illinois state law concerning drug education.

410-3 Human Sexuality. (Same as WGSS 411) Provides detailed information on dimensions of sexuality; characteristics of healthy sexuality; anatomy and physiology; gender roles; relationships; sexually transmitted infections/diseases;

contraceptive issues and concerns; sexual victimizations; and sexuality through the life cycle.

411-6 Emergency Medical Technician in the Wilderness. Placement of trained emergency medical technicians into a wilderness situation and having them adopt previously learned skills and newly developed skills. Prerequisite: HED 334 or 434.

412S-3 Driving Task Analysis: An Introduction. An introductory course that deals with the highway transportation system, traffic problems, the driving task, perception and implementation of the driver education classroom program. Observation of a teaching environment is included. A valid driver's license is required.

413S-3 Injury Prevention and Safety. Introduces the concepts and topics of injury prevention and safety. Course areas include: school, farm, consumer, fire, home, traffic, occupational, recreational, and disaster.

414-3 Sexuality Education. Focuses on knowledge/skills needed to address complex issues of sexuality education. Discussion will include challenges/resources for all health education settings and related disciplines. Purposes/goals, the nature of sexuality education teachers/learners, and "best practice" will be covered. Emphasis on developing competencies essential for professional practice.

415-3 Health Counseling. This course teaches basic communication skills and intervention strategies for helping people make positive health related lifestyle changes. It is not a course in therapeutic counseling; it focuses on helping average people to function in the healthiest way possible.

430-3 Health and Injury Control in a Work Setting. (Same as IMAE 430) Assesses the health and injury control programs present in a work setting. Emphasis given to employee programs in health, wellness and injury control that are effective. Field trips to work sites are included.

434-4 Advanced First Aid and Emergency Care. Meets the needs of those in positions where advanced first aid and emergency care is required. A nationally recognized First Aid and CPR "First Responder" certification may be obtained with successful completion of the course. Purchase of first aid kits and protective equipment are necessary. Prerequisite: HED 334 or consent of instructor. Student will be required to pay a laboratory fee of \$20.

435-2 Work Site Safety and Health Evaluation. This course covers methods of inspecting and evaluating health and safety hazards at a work site including analysis of specific job assignments. It also introduces the student to injury and incident investigation techniques. The course will include hands-on work site evaluation.

440-3 Health Issues in Aging. (Same as GRON 440) Course content includes demographic trends; physiological changes associated with aging; health care and consumer challenges; cultural differences; psychological effects of aging; housing; long-term care; retirement; care giving; and formal, informal, and community-based support systems.

441-3 Women's Health. The course deals with a wide variety of health concerns of American women as consumers in the current health marketplace. Major categories of topics include health products, health services and sources of health information of particular interest to women. Emphasis is also placed on current health related issues of women. The major purpose of

the course is to provide a basis for informed decision-making by the female consumer.

442S-3 Developing Vehicle Operational Skills: Driver Education Laboratory Experiences. Learning activities will focus on preparing the prospective driver educator to conduct activities that develop operational skills for a novice driver. Emphasis is placed on laboratory organization and administration, maintaining a learning environment, developing laboratory instructional modules, and conducting learning experiences. Prerequisite: HED 412S.

443S-3 Developing Classroom Skills: Driver Education Classroom Experience. Learning activities will focus on preparing the prospective driver educator with the skills to teach in the driver education classroom with application to classroom organization, maintaining a safe learning environment, developing instructional modules, and conducting learning experiences. Prerequisite: HED 412S with a grade of C.

445-3 Advanced Driver Education Instructor Training. Prepares prospective instructors of advanced driving techniques. Emphasis is placed upon safe driving practices, vehicle dynamics, emergency vehicle operation, in-car response to simulated driving emergencies and instructional techniques. Special approval needed.

450-3 Health Programs in Elementary Schools. This course is designed to present key health-related concepts and skills to enable teachers to deliver culturally-sensitive, developmentally-appropriate, standard-based instruction elementary students. It also will provide an overview of coordinated school health programs and their relationships to academic achievement.

461-1 to 12 Health Education Workshop. A different focal theme each year; e.g., mood modifying substances, ecology, human sexuality, emotional and social health dimensions. Information, ideas, and concepts are translated into teaching-learning materials and approaches; continuing opportunity for interaction between prospective and experienced teachers.

470S-3 Highway Safety as Related to Alcohol and Other Drugs. Relationship between alcohol and other drugs and traffic accident causes. A review of education programs designed to minimize drug related accidents. Restricted to advanced standing or consent of instructor.

471-2 Health Education Instructional Strategies. This course is designed for graduate students who are teaching assistants in the Department of Health Education. The purpose of the course is to enhance professional skills of those who are responsible for teaching health education, general education and first aid.

476-3 Stress Management. A study of the physiological, emotional and sociological stressors and their underlying mechanisms in states of disease and health. Particular emphasis is placed upon prevention and control of stress via self assessment techniques and proficiency in self control techniques such as biofeedback, autogenic training, meditation and progressive muscle relaxation.

480S-3 Traffic and Driver Education Program Development. Acquaints students with curriculum innovation, current philosophy, learning and teaching theories, and instructional designs. Students will develop learning packages and modules. Prerequisite: HED 443s or consent of instructor.

484-3 Preventing Violence in Educational Settings. Designed to prepare educators, administrators, and other professionals

to plan, implement, and evaluate violence prevention, conflict resolution, and crisis intervention programs in educational settings. Incidence/prevalence, etiology, and risk/protective factors related to youth violence will be examined. Current theories and models related to program planning and implementation will be applied to design coordinated, integrated school/community programs. Based on current research, key elements of effective curricula and other program components will be re-viewed.

489-3 Introduction to Biostatistics. An introduction to biostatistics; examination of theories of population projections; collection, organization, interpretation, summarization and evaluation of data relative to public health happenings with emphasis on graphic presentation.

490A-2 to 12 Field Experiences in Schools, Community Health. Field observation, participation, and evaluation of current school or community health education or safety programs in agencies relevant to student interests. Prerequisite: all required health education courses. Special approval needed from the instructor.

490B-2 to 6 Advanced Field Experience in School, Community Health or Injury Prevention Education. Advanced field observation, participation and evaluation of current school or community health education or injury prevention programs in agencies relevant to student interest. Prerequisite: grade B or better in HED 490A. Special approval needed from the instructor.

491-3 Health Teaching/Learning: School and Community. Teaching and learning strategies at secondary school levels and in other community group settings. Opportunities to examine and observe a variety of educational strategies applicable to health education.

493-3 Health Informatics. The application of technology to engage communities and individuals in behavioral and environmental change processes. The course will focus on the use of technology to describe the magnitude of health problems and their sources; analyze risk factors; identify community strengths from which strategies may be defined and tools created to intervene, prevent problems, and promote health and well-being; and continuously evaluate, refine, and implement what works.

496-4 Industrial Hygiene. Provides a background in the recognition, evaluation and control of toxic materials and hazardous physical agents in the work environment. Special approval needed from the instructor.

499-3 Rx: Education in Health Care Settings. Designed for members and potential members of the health care team to explore educational concepts and strategies applicable to a variety of health care settings. Includes rights and responsibilities of consumer and professional, determinants of health behavior, contrasting models of health care, communication skills, media and materials and planning, implementing and evaluating educational programs. Open to medical and dental personnel, nurses, health educators, dietitians, therapists, pharmacists, social workers and related professionals.

500-3 Community Organization. This course addresses the process of engaging communities in health education and behavior change programs. Various organizing paradigms for fostering healthy communities are examined, and their practical and ethical implications are considered. Skills development for community assessment, constituency-building, and leadership of participatory planning efforts is emphasized.

505-3 Introduction to Public Health. This course provides an overview of the interdisciplinary field of public health. History and ongoing evolution of public health services and delivery systems in the U.S., essential of public health practice, and federal, state, and local public health functions are considered. Emerging health problems, changing population dynamics, and global health context will be examined.

510-3 Program Planning and Curriculum Development in Health Education. In this course similarities as well as differences between program planning and curriculum development will be examined. For both areas current theories, models and designs will be analyzed. The importance of and procedures for developing philosophy, goals and objectives will be studied. Processes used in selection of content, learning approaches, resource teaching/learning materials will be investigated. Implementation and evaluation issues will be addressed.

512-3 Public Health Program Planning. This course will present theories/model for health promotion program planning and implementation in community/public health settings. Steps to program planning, including: logic models, needs assessment, community organizing, evaluation/assessment, and social marketing will be addressed.

515-3 Contemporary Issues in Health-Related Fields. This course is designed to expand the conceptual framework for health education research, practice, and professional development by examining contemporary issues in health and related fields. It includes rearing, analyzing, interacting, and reflecting about selected critical issues and future concerns as they relate to the health education profession as well as individual, community, and societal health-related needs.

520-6 Special Topics/Independent Study. An area of study to be determined by students in consultation with the health education faculty that goes beyond the current health education course offerings. 1-3 credits; may be repeated twice for maximum of 6 hours. Special approval needed from the instructor.

525-3 Health Behavior and Health Education. Examines health-related motivation and behavior through the study of relevant psychological, sociological, and educational theory and research. Emphasis is on application of behavioral and behavior-change theories and constructs in designing effective health education and promotion programs.

526-3 Research and Evaluative Approaches to Health Education. Introduction to research and evaluation. Includes survey and analyses of health testing and research/evaluation procedures, uses and limitations of knowledge and attitude tests, behavioral inventories, checklists, questionnaires, interviews, and other techniques.

530S-3 Research in Traffic Safety. A study of unique problems related to traffic safety and a review and evaluation of contemporary studies. Restricted to graduate standing or consent of instructor.

532-3 Public Health Administration: Principles and Practices. This course is designed to provide a broad overview of key administrative issues in public health, including building and sustaining a public health workforce, disease control and prevention, emergency preparedness, legal issues, and financial considerations. Attention will be given to the application of management concepts and principles related to public health

organizations at the nation, state, and local levels.

533A-4 Foundations of Health Education I. Historical and philosophical foundations of health education dealing with principles of the discipline and preparation for services as a professional. Consideration of theoretical models of health and health education, professional ethical issues and future directions.

533B-4 Foundations of Health Education II. This course will provide a broad overview of quantitative research in health education, including research designs, research questions, assumptions, limitations, data collection methods, sampling, instrument development, and data analysis and interpretation. Discussion of health-related theories/models and ethical considerations will be integrated throughout the course. Prerequisite: HED 533A or consent of instructor.

536-3 Professional Preparation in Health Education. Considers national, state and local factors influencing professional preparation, accreditation and certification processes. Emphasis upon influences of official and non-official agencies. Historical perspective, the present status, and future directions of the profession.

541-3 Issues in Health Care. Examination of current and continuing issues in the provision, administration, financing, and regulation of health care services. Prerequisite: HED 583 with grade of C or better or consent of instructor.

550S-3 Current Developments in Traffic and Safety Education. Current problems, trends and research studies in traffic and safety education are reviewed, critiqued and evaluated.

555S-3 Traffic Safety Management. Course deals with highway safety legislation and other acts related to traffic safety. Application of safety management techniques, procedures and structure of federal and state agencies are emphasized. Special approval needed from the instructor.

561-1 to 12 Advanced Health Education Workshop. A different focal theme each year; e.g., technology and health education; coordinated school health programs; social marketing; mental health. Information, ideas and concepts are translated into teaching/learning materials and approaches; continuing opportunity for interaction between prospective and experienced health educators.

571-3 Professional Development for Teaching Assistants. This course is designed to assist graduate teaching assistants to develop and improve skills necessary for performing their responsibilities. Emphasis will be placed on teaching/learning processes; classroom strategies and skill development; responding to diverse student populations; communication across the curriculum; teaching outside the classroom; identifying campus and community resources, support services, media, and technologies; evaluation and assessment. Restricted to graduate teaching assistants. Special approval needed from the instructor.

583-3 U.S. Health System: Organization, Delivery, and Policy. This course examines dynamics and trends in organization, financing, and delivery of health care in the United States. Specific current health policy issues and the political, social, and economic forces that affect them are analyzed. Practical implications for public health professionals will be considered.

585-3 Global Health Issues. This course is designed to introduce students to current health concerns in economically

developing nations by examining socioeconomic, cultural, and political issues impacting health. Basic epidemiologic principles will be used to study disease and adverse health conditions in developing countries as well as understand and critique possible intervention strategies. Implications for health educators working in international settings will be discussed.

588-3 Current Issues in Environmental Health. This course will address core principles and concepts of environmental health disciplines, analyze environmental factors impacting human and ecological health, and explore environmental health tools through their application to current issues of concern to government agencies.

590-6 to 9 Practicum in Community Health. Students complete 300 to 450 hours in an approved community health agency. Working with preceptors, students design and put into practice an individual project with goals and objectives emphasizing one or more core competencies (i.e. assessment, planning, implementation, and evaluation). Prerequisite for MPH students: Completion of all coursework. Restricted to health education majors. Special approval needed from the instructor.

592-8 Practicum in Safety and Industrial Health. Students are assigned full-time to a safety agency or industry for experience in either safety or industrial health. Restricted to those specializing in safety industrial health. Special approval needed from the instructor.

593-3 Epidemiology. This course will present principles and practices related to the study, prevention and control of health-related conditions in the human population. Emphasis will be placed on understanding the principal concepts of epidemiology, including aspects of disease distribution, epidemiologic methods, risk assessment of disease and injury, descriptive and analytic epidemiologic methods and study designs, and application of epidemiologic data to the prevention and control of disease and injury. Format for the class will include lecture and small group seminars.

597-2 Seminar in Health Education. Advanced graduate students discuss individual health projects and present research problems. Each will present a dissertation prospectus. The course will cross two semesters. The first semester will require class attendance. The second will require attending dissertation prospectus and defense meetings and writing individual reports. Prerequisite: HED 533B

598-3 Grant Writing in Health Education. Consideration is given to funding sources, proposal guidelines, procedures for support, budgetary requirements and evaluation procedures. Students examine different types of funded projects, develop a research proposal and analyze the art of grantsmanship and political action.

599- 1 to 6 Thesis.

600-24 Dissertation.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Higher Education

<http://ehs.siu.edu/eahe/>
eahe@siu.edu

COLLEGE OF EDUCATION AND HUMAN SERVICES

Graduate Faculty:

Colwell, William Bradley, Professor, Ph.D. and J.D., University of Illinois at Urbana-Champaign, 1996. Education law and policy, collective bargaining.

Dilley, Patrick, Associate Professor, Ph.D., University of Southern California, 2000; 2001. History of higher education, gender studies, and qualitative research.

Donahoo, Saran, Associate Professor and *Program Director*, Ph.D., University of Illinois at Urbana-Champaign, 2004; 2004. Higher education administration and educational administration.

Dunn, Randy, Professor, Ed. D., University of Illinois at Urbana-Champaign, 1991. Educational administration, Higher education leadership.

Jones, Sosanya E., Assistant Professor, Ed.D., Teachers College, Columbia University, 2013; 2013. Higher education, qualitative research, and race and diversity.

Graduate Study in Higher Education

The Department of Educational Administration and Higher Education provides graduate study leading to the Master of Science in Education degree in higher education.

The graduate program in higher education offers students an opportunity to study and explore the concept of higher education as a field of study. The faculty of this program encourages and assists students in developing a lifetime commitment to the study of higher education. They also provide preservice and in-service preparation for persons who are teaching or serving as administrators or who expect to teach or serve as administrators in two-year and four-year colleges and universities, and related post-secondary educational institutions and agencies.

This program requires a nonrefundable application fee that must be submitted with the application for Admissions to Graduate Study in Higher Education. Applicants must pay this fee by credit card.

Master of Science in Education Degree

The Department of Educational Administration and Higher Education offers a program in higher education leading to the Master of Science in Education degree. The emphasis of this degree is to provide individuals with the background and skills important to accepting a wide range of teaching and administrative positions in higher education. Concentrations in community college teaching and college student personnel are offered.

Students applying for admission are encouraged to have some leadership experience prior to starting graduate study. Students who expect to complete a program to prepare them for teaching in a community college are expected to have an undergraduate major in a subject area commonly taught in a community college.

Community College Teaching (32 semester hours, minimum). Students who wish to teach in a community college must

complete at least 20 semester hours in their teaching specialty and at least 12 hours in specified courses in educational administration and higher education, for a minimum of at least 32 semester hours. Students in this program must secure prior to admission a subject matter adviser from the faculty of the subject area who will agree to help plan the student's academic program.

The common core of courses required of students in this program includes the following:

EAHE 516-3	College Students and College Culture
EAHE 518-3	College Teaching
EAHE 524-3	Curriculum Design and Policy
EAHE 526-3	The Community College

Students must also complete a minimum of 20 semester hours in their teaching specialty. Recommended courses beyond the minimum requirements are as follows, and must be taken unless waived by the program coordinator:

EAHE 500-3	Educational Research Methods
EAHE 598-2 to 6	Internship or
EAHE 599-3	Thesis/Individual Research 593A-L

College Student Personnel (42 semester hours). This program is designed to prepare new professionals to work as student affairs administrators and educators within institutions of higher education. Students must complete a minimum of 42 semester hours of courses designed to prepare them as higher education generalists. Through internships, electives, and professional development seminars, students individualize their programs to acquire specialized emphasis in various student affairs units, including admission and recruitment, student development, student activities and programming, alumni relations, career planning, financial aid, orientation, placement, and residence life.

College Student Personnel Common Core (12 hours):

EAHE 510-3	Higher Education in the United States
EAHE 513-3	Org. and Administration in Higher Education
EAHE 515-3	Student Affairs Administration
EAHE 516-3	College Students and College Culture

Educational Research (3 hours)

As selected with advisor.

Cognate (12-18 hours):

Students will work with advisor to construct a cognate, which is compatible with their academic and professional interests. Possible cognates include, but are not limited to: Administration, Cultural Contexts, and Student Affairs.

Professional Development (3 to 9 hours)

EAHE 591-1 to 6	Individual Study
EAHE 598-3 to 6	Higher Education Internship

Capstone (3 hours)

EAHE 547-3	Evaluating Educational Research
EAHE 593L-3	Research Paper
EAHE 599-3	Thesis

Electives (3 to 6 hours)

As selected with advisor.

Waiver for Internship Requirement. Each student must

complete or obtain a waiver for the required internship in addition to any paid assistantship that the student may secure. Internships must be in a setting different from the student's assistantship or professional work environment. Internship opportunities exist through most areas of Student Affairs on the SIU Carbondale campus; other locations or settings might be eligible; each student must obtain approval from his/her advisor before initiating any internship. Student with non-assistantship based, professional experience in higher education may seek a waiver of the internship requirement. All waivers must be in writing and require advisor approval. Students permitted to waive the internship requirement must complete an additional three units of independent study to satisfy the credit requirements needed to obtain the degree.

Research Requirements. Community College Teaching master's students shall demonstrate research competencies through writing an acceptable research paper or master's thesis (which involves original research); College Student Personnel concentration students also have an option, in lieu of a research paper or thesis, to complete EAHE 547 (Evaluating Educational Research). Students who select the thesis option must have an approved prospectus on file at least six months in advance of the anticipated graduation date; they must enroll for 3 hours of EAHE 599, Thesis; and they must have a committee of at least three faculty members. Students who elect to write a research paper must have a committee of two faculty members, and they must enroll in 3 hours of EAHE 593-L, Research Paper. Students who chose the thesis or research paper option are required to complete successfully a final examination, which usually consists of a presentation and defense of the research paper or thesis; this exam may be written, oral, or both.

Courses (EAHE)

For a list of courses, see Educational Administration.

History

www.history.siu.edu/

history@siu.edu

COLLEGE OF LIBERAL ARTS

Graduate Faculty:

Allen, Howard W., Professor, *Emeritus*, Ph.D., University of Washington, 1959; 1962.

Allen, James Smith, Professor, Ph.D., Tufts University, 1979; 1991. European; Modern: France; social and cultural.

Argersinger, Jo Ann E., Professor, Ph.D., George Washington University, 1980; 1998; U.S. labor.

Argersinger, Peter H., Professor, *Emeritus*, Ph.D., University of Wisconsin, Madison, 1970; 1998. U.S. political, rural, Gilded Age.

Barton, H. Arnold, Professor, *Emeritus*, Ph.D., Princeton University, 1962; 1970.

Batinski, Michael C., Professor, *Emeritus*, Ph.D., Northwestern University, 1969; 1968.

Bean, Jonathan J., Professor, Ph.D., Ohio State University, 1994; 1995. U.S.: economic and business.

Bengtson, Dale R., Assistant Professor, *Emeritus*, Ph.D., Hartford Seminary Foundation, 1971; 1973.

Benti, Getahun, Associate Professor, Ph.D., Michigan State University, 2000; 2001. Modern Africa, urbanization-migration.

Brown, Ras Michael, Associate Professor, Ph.D., University of Georgia, 2004; 2006. Atlantic World.

Carr, Kay J., Associate Professor and *Chair*, Ph.D., University of Chicago, 1987; 1989. U.S. Social; 19th century; Illinois, frontier, environmental.

Carrott, M. Browning, Professor, *Emeritus*, Ph.D., Northwestern University, 1966; 1967.

Conrad, David E., Professor, *Emeritus*, Ph.D., University of Oklahoma, 1962; 1967.

Detwiler, Donald S., Professor, *Emeritus*, Dr. phil., Goettingen University, 1961; 1967.

Dotson, John E., Professor, *Emeritus*, Ph.D., Johns Hopkins University, 1969; 1970.

Fanning, Charles F., Professor, *Emeritus*, Ph.D., Pennsylvania, 1972; 1993.

Gold, Robert L., Professor, *Emeritus*, Ph.D., University of Iowa, 1964; 1965.

Haller, John S., Jr., Professor, *Emeritus*, Ph.D., University of Maryland, 1968; 1990.

Hurlburt, Holly S., Associate Professor Ph.D., Syracuse University, 2000; 2001. Early Modern Europe, Italy, women and gender.

Lieberman, Robbie, Professor, *Emeritus*, Ph.D., University of Michigan, 1984; 1991.

Murphy, James B., Associate Professor, *Emeritus*, Ph.D., Louisiana State University, 1968; 1968.

Najar, Jose, Assistant Professor, Ph.D., Indiana University, 2012; 2014. Latin America, Brazil.

O'Day, Edward J., Associate Professor, *Emeritus*, A.M., Indiana University, 1956; 1962.

Shelby, Lon R., Professor, *Emeritus*, Ph.D., University of North Carolina, 1962; 1961.

Sramek, Joseph, Associate Professor, Ph.D., CUNY Graduate Center, 2007; 2007. Late modern Europe, imperial England, gender and sexuality.

Stocking, Rachel, Associate Professor, and *Director of Graduate Studies*, Ph.D., Stanford University, 1994; 1994. European: Ancient and early medieval; cultural and political; Spain.

Weeks, Theodore R., Associate Professor and *Director of Undergraduate Studies*, Ph.D., University of California, Berkeley, 1992; 1993. Russia/USSR, East Central Europe: cultural and political; nationalism.

Werlich, David P., Professor, *Emeritus*, Ph.D., University of Minnesota, 1968; 1968.

Whaley, Gray, Associate Professor, Ph.D., University of Oregon, 2002; 2006.

Wiesen, S. Jonathan, Professor, Brown University, 1997; 1998. Modern Europe, Germany, Jewish.

Wilson, David L., Professor, *Emeritus*, Ph.D., University of Tennessee, 1974; 1974.

Yilmaz, Hale, Associate Professor, Ph.D., University of Utah, 2006; 2006. Islamic, Middle East, modern Turkey.

Zaretsky, Natasha, Associate Professor, Ph.D., Brown University, 2002; 2002. Recent U.S., cultural, gender and family.

SIU Edwardsville Cooperative Ph.D. Faculty:

Alexander, Erik B., Assistant Professor, Ph.D., University of Virginia, 2011. 19th century U.S., Civil war and reconstruction.

Cheeseboro, Anthony, Associate Professor, Ph.D., Michigan State University, 1993. History of development, agriculture, and slavery.

Frick, Carole C., Professor, and *Chair*, Ph.D., UCLA, 1995. Renaissance/Reformation and Early Modern history.

Harris, Jessica, Assistant Professor, Ph.D., Cornell, 2011. African American history, 20th century U.S.

Hazelwood, Rajbir Purewal, Assistant Professor, Ph.D., Washington University in St. Louis, 2013. Twentieth-Century Britain, South Asia.

Hinz, Christienne L., Associate Professor, Ph.D., Ohio State University, 2001. Japanese history, business history, world history, women's history.

Jack, Bryan, Assistant Professor, Ph.D., St. Louis University, 2004. African American history, 19th century U.S.

Jordan, Thomas, Associate Professor, Ph.D., University of Illinois, Urbana-Champaign, 1999; 2004. History of Brazil, Latin America, social history.

Manuel, Jeffrey, Assistant Professor, Ph.D., University of Minnesota. United States, Public History, Urban History, Digital Media.

McClinton, Rowena, Professor, Ph.D., University of Kentucky, 1996. Native American history, Antebellum South and United States history since 1865.

Miller, Jennifer, Associate Professor, Ph.D., Rutgers University, 2008. Germany.

Milsk Fowler, Laura, Associate Professor, Ph.D., Loyola University, Chicago, 2003. Museum Studies, Illinois History, Urban History.

Paulett, Robert, Associate Professor, Ph.D., College of William

& Mary, 2007. Colonial America.

Ruckh, Eric, Associate Professor, Ph.D., University of California, Irvine, 1997. Modern Europe Intellectual History.

Sjursen, Katrin, Assistant Professor, Ph.D., University of California-Santa Barbara, 2010. Medieval Europe.

Stacy, Jason, Associate Professor, Loyola University Chicago, 2006. Antebellum U.S., Social science pedagogy.

Tamari, Stephen E., Associate Professor, Ph.D., Georgetown University, 1998. Middle East history, Ottoman Empire, Arab world, Arab-Israeli conflict.

Thomason, Allison K., Professor, Ph.D., Columbia University, 1999. Ancient Near Eastern and Greco-Roman history.

The Department of History offers graduate programs leading to the Master of Arts and Doctor of Philosophy degrees.

Research Facilities

Morris Library on the campus is the fourth largest library in Illinois. Housed in a modern seven-story building, it contains more than 2 million volumes and is growing at a rate of over 60,000 items per year. Morris Library acquires current scholarly publications not only from United States but also from Latin America and European publishers. The long-term use of highly specialized materials is afforded by the affiliation of Morris Library with the Center for Research Libraries in Chicago.

The holdings in history and related areas amount to more than 500,000 volumes. To these must be added 20,000 reels of microfilm containing printed secondary works and 6,000 volumes of printed source material and 30,000 volumes of early American imprints prior to 1800 on microtext. Among the materials in the process of acquisition is a microtext edition of all newspapers published in the United States prior to 1820.

The library also possesses substantial holdings in the form of microfilm editions of presidential papers, dispatches and instructions of the state department since 1789, massive holdings in consular records, and the Adams family papers. The library has been a complete repository of United States government documents since 1954 and holds a large collection of earlier documents, including a virtually complete Congressional set.

Following the acquisition of the 7,000-volume library of Jose Morgrovejo Carrion of Ecuador in 1960, the library has systematically expanded its holdings in Latin American history, government, literature, and anthropology. The papers of Francisco Vázquez Gómez, Mexican political leader (1907–1919), Peruvian diplomat and business tycoon, Federic Barreda and Samuel Putnam, American expert on Latin American affairs, provide rich research opportunities. Extensive files of serial publications from Argentina, Bolivia, Paraguay, Uruguay, Cuba, and Mexico also contain diverse sources for investigation. Many of the above materials are unavailable elsewhere in the United States.

Holdings in European history include the standard documentary publications, as well as scholarly serials and journals. The materials to support research are strongest in modern German and English history.

Admission

Graduate work in history is offered at both the master's and the doctoral levels. Admission to programs administered by the Department of History must be approved by the department,

with approval dependent upon the preparation, ability, and promise of the individual student.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in History. Applicants must pay this fee by credit card.

M.A.: for the Master of Arts degree major in history, applicants are expected to have an undergraduate GPA of 3.0. Applicants with GPAs of below 3.00 may be granted conditional admission. Applicants must also provide a report of the result of the general test of the Graduate Record Examination, three letters of recommendation, and a letter in which the applicant expresses professional goals. Conditional admittants must earn a 3.00 GPA in graduate coursework in the first semester. The department reserves the right to terminate from the history program a student who does not establish and maintain a 3.00 GPA in history courses.

Ph.D.: for admission to the doctoral program, each applicant should submit to the department, in addition to the material required by the Graduate School, the following: three letters from former teachers, preferably at the graduate level; a letter in which the applicant expresses professional goals; a writing sample, and a report of the result of the general test of the Graduate Record Examination.

In rare instances, accelerated entry into the Ph.D. program is possible for exceptionally qualified M.A. students who have made an early commitment to doctoral study. Such students may petition after two semesters in the M.A. program for accelerated entry. The petitioner must demonstrate the ability to perform at the Ph.D. level. This includes a G.P.A. of at least 3.7 ($A = 4.0$) in graduate history courses, exemplary letters from SIU professors, excellent GRE scores, and the submission of a seminar paper or published article for evaluation by the Graduate Studies Committee. The student must have completed one colloquium/seminar sequence, History 500, 501 and the research tool required for the M.A. Upon approval, the History Department will recommend to the Graduate Dean direct admission to the Ph.D. program. Direct entry into the Ph.D. program from baccalaureate studies is possible for students of exceptional ability. This can be demonstrated through extensive undergraduate course work of superior quality, excellent GRE scores, proficiency in research tools, previous research experience, and letters of recommendation. Students who have taken course work after the undergraduate degree may not petition for direct entry. Upon approval of the petition, the Department of History will recommend to the Graduate Dean direct admission into the Ph.D. program.

M.A. in History, Thesis Track

The thesis track should be selected by those students who plan to continue on for a doctoral degree in history, either at SIU or elsewhere. The thesis track provides students with the necessary historiographical and methodological skills to complete a significant, original research project, and to be prepared for the rigors of a Ph.D. program. The decision to opt for the thesis track ought to be made in consultation with the student's assigned advisor and/or the director of graduate studies during the first semester of the first year of the M.A. The thesis track M.A. consists of 33 credit hours of coursework (including 6 thesis

hours), the completion of a research tool (usually proficiency in a foreign language), and the writing and oral defense of a thesis. A sample program of study for the thesis track is below:

Year 1	
Semester 1:	Semester 2:
HIS 500 (3 credits)	HIS 501 (4 credits)
Colloquium (4 credits)	Seminar (4 credits)
Research Tool (3 credits)	Research Tool (3 credits)
Total credit hours: 10	Total credit hours: 11

Thesis track students should, in consultation with their advisor, select elective History courses, (400 level, or 490/590 independent readings courses) or courses outside the History program (400 level or higher) on topics or themes that will support or complement their thesis research and writing. Up to 10 hours of 400 level elective courses apply to the required 33 credit hours, as do up to 10 hours of coursework at 400 level or higher taken outside the department. Thesis track students are strongly encouraged to complete their research tool in their first year.

Year 2	
Semester 1:	Semester 2:
HIS 599 (thesis - 3 credits)	HIS 599 (thesis - 3 credits)
Elective (3 credits)	Elective/Seminar (3-4 credits)
Elective/Colloquium (3 credits)	
Total credit hours: 9	Total credit hours: 6-7

In consultation with their advisor, a thesis track M.A. student should begin the research for his/her thesis in the spring or summer of the first year in the program, ideally enrolling in a readings (490/590) course with their advisor for an introductory survey of historiography and pertinent issues in their field of interest. Research and writing of the thesis continue in the fall, so that the thesis is ready for distribution to the thesis committee (3 faculty, at least 2 of whom are full-time faculty in the History Department) in the early spring (prior to March 1) of Year 2. The defense of the thesis will be an oral defense, during which the examining faculty will consider the content, methodology, conclusions, style, and historiography of the work, and ask the student to place his/her work within the larger context of his/her program of study, including the historiography of the thesis's field and especially HIS 500 and 501.

M.A. in History, 2 Research Paper Track

The 2 paper track should be selected by students who envision careers as high school and community college educators, and those seeking to develop their interests in a historical field. The 2 paper track requires the completion of 36 credit hours of coursework and the completion of a research tool (usually proficiency in a foreign language, or a non-language option). Rather than a thesis, the capstone activity of the 2 paper track is the completion of 2 research papers in conjunction with two seminar courses, and 1 field exam in the geographical/chronological area of the student's choice. The 2 paper track should provide students with a basic understanding of historiography and historical methods, give the student some experience in historical research and writing at the graduate level, and provide in-depth knowledge of the history and

historiography of their selected area of interest. A sample program of study is below:

Year 1	
Semester 1:	Semester 2:
HIS 500 (3 credits)	HIS 501 (4 credits)
Colloquium 1 (4 credits)	Seminar 1 (4 credits)
Research Tool (3 credits)	Research Tool (3 credits)
Total credit hours: 10	Total credit hours: 11

2 paper track students should, in consultation with their advisors, select elective History courses, (400 level, or 490/590 independent readings courses) or courses outside the History program (400 level or higher) and colloquium/ seminar sequences (2 required) which are relevant to their identified area of interest, when possible. Up to 10 hours of 400 level elective courses apply to the required 36 credit hours, as do up to 10 hours of coursework at 400 level or higher taken outside the department. Students are strongly encouraged to complete their research tool in their first year.

Year 2	
Semester 1:	Semester 2:
Colloquium 2 (4 credits)	Seminar 2 (4 credits)
Elective (3 credits)	Elective (3 credits)
Elective (3 credits)	Elective (3 credits)
Total credit hours: 10	Total credit hours: 10

By the spring of their first year, 2 paper track students should have identified their field of study, and in conjunction with a faculty member who specializes in that field, begun to assemble a reading list of required works for the student's examination. Students *must* complete at least one course (500 level colloquium/seminar sequence, 400 level elective or 490/590 independent reading) with the faculty member who will oversee their exam field. Students should plan to take this exam either late in semester 1 or early in semester 2 of their second year in the program. The examining committee will consist of the field professor, and at least one of the professors who taught the students' two colloquium/ seminar sequences. The oral defense will consist of discussion of the student's overall program of study, and include assessment of seminar papers and written responses to the field exam

The Doctor of Philosophy Degree

A student seeking the Ph.D. degree in historical studies must pass preliminary examinations and submit a satisfactory dissertation based on independent and original research. In preparation for preliminary examinations, the doctoral student must complete at least twenty-four graduate credit hours. These hours must be completed during a period of not more than four calendar years. The courses and hours of credit necessary for a doctoral student to prepare for preliminary examinations will be determined by the student's advisory committee. All Ph.D. students must include in their 24 hours, two colloquium-seminar sequences with grades of *A* or *B*. The goal is to develop high competence in the selected fields in which the student will be examined. Students are responsible for preparing three fields in which they will be examined. Two of the three fields

will be selected from the following list of general fields:

- United States to 1877
- United States since 1865
- Latin America, Colonial
- Latin America, National
- Europe, medieval
- Europe, early modern
- Europe, modern
- Britain, modern
- East Asia, modern
- Africa and African Diaspora
- Middle East

The third field is a focused field of study defined in consultation with the student's examination committee. Examples of focused fields are available on the history department website.

The student's advisory committee may require the student to take a diagnostic examination. All Ph.D. students must complete at least six hours of graded graduate work in a field outside North America and Western Europe.

Two research tools are required by the Graduate School. At least one research tool must be a foreign language. Information on requirements for two research tools may be found on the department website.

Students may undertake an internship program under the direction of their advisory committees. More specific information is available on file in the department office and on the website. After completing the course work, fulfilling the research tool requirements, passing the preliminary examinations, and presenting an acceptable dissertation prospectus, the student will be recommended for Ph.D. candidacy and will devote full time to the dissertation. Dissertation subjects must be chosen from either United States history, Latin American history, European history, African history, or history of Asia/the Middle East. The final oral examination will cover the field of the dissertation and related matters.

Cooperative Ph.D. Program

The Departments of History at SIU-Carbondale and SIU-Edwardsville have entered into a cooperative Ph.D. program in Historical Studies which enables students to do work on both campuses. Additional information may be obtained at <http://www.siu.edu/artsandsciences/historicalstudies/phd/>

Assistantships and Fellowships

Fellowships and teaching assistantships are available to qualified graduate students. All carry stipends and remission of tuition. Application for these awards should be submitted by January 10 in order to be considered for the following academic year.

Additional information concerning rules governing the graduate program in history may be obtained by writing to the director of graduate studies, Department of History.

Courses (HIST)

401-3 Atlantic History. This course examines the origins and development of the Atlantic basin as an intercommunication zone for African, European and American societies from the mid-15th century through the early-19th century. Themes include transformation of environments, forced and voluntary

migrations, emergence of distinct Atlantic culture communities, development of Atlantic economics and formulation and implementation of Atlantic revolutionary ideologies.

403-3 American Indians and U.S. Empire. Use historical analysis to investigate sovereignty issues involving American Indians and the United States. The course looks critically at the relationship between Native people and dominant U.S. society in terms of colonialism. Students will read academic scholarship and write papers on related cultural, economic, political, and social topics. Prerequisite: None, HIST 366 recommended.

406A-3 Gender, Family, and Sexuality in Pre-Modern Europe. (Same as WGSS 406A) A discussion of the history of the family, creation of gender roles, and importance of sexuality from medieval times to the French Revolution.

406B-3 Gender, Family, and Sexuality in Modern Europe. (Same as WGSS 406B) A discussion of the history of family, creation of gender roles, and importance of sexuality from the French Revolution to the present. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement.

407-3 History of Latinos in the United States. This course examines the history of Latino/a and Latin American peoples in the United States from the Colonial Era to the present. Themes to be addressed in the course include early Imperialism and commercial expansion, the social construction of race, the formation of "borderland" communities, Latino immigration and assimilation, the centrality of work and labor within Latino history, and contemporary Latino culture and politics.

408-3 History of Mexico. This course surveys the history of Mexico from the earliest human inhabitation to the present. It will present different interpretations of the major themes and developments in Mexican history. A goal is to understand Mexico from the perspective of the Mexican rather than from the point of view of the United States. Themes to be included in the course include the diversity of pre-Columbian indigenous societies; Spanish conquest; colonialism and anti-colonialism; Mexican independence; the historiography of the Mexican Revolution; and the place of Mexico within the world-economic system.

409-3 Food and History. Food is fundamentally about survival - it was for our ancestors millennia ago, and continues to be so, not only for the millions of undernourished worldwide, but for all of humanity as we confront the impact of obesity, globalization and environmental change. Because food is essential to our survival, its history is long, varied, and rich, and touches on themes including (but not limited to) politics and government; gender, race, ethnicity; the family, religion, and culture; health and the environment, and business, industry, and advertising. This class will explore these themes of global food history.

410-3 Europe in the Long Nineteenth Century, 1789-1914. This course offers a topical examination of the history of Europe from the French Revolution to World War I, mainly focusing on the French Revolution, industrialization, nationalism and nation building, and imperialism. There will also be some focus on European intellectual and cultural transformations during this period. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement.

412A-3 Empire and Social Conflict in the Roman Republic. The social, political and cultural consequences of Roman expansion during the Republican period (c. 700-44 BCE). Focus on reading and analyzing primary sources. Fulfills the CoLA Writing-

Across-the-Curriculum (WAC) requirement.

412B-3 Religion and Society in Imperial Rome. Religious, social and cultural conflict and change in the Roman Empire, first through third centuries. Focus on reading and analyzing primary sources. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement.

413-3 Christianization of Power and Society in Late Antiquity. An investigation into the political and social changes involved in the rise of Christian leadership in Western Europe following the fall of the Roman Empire. The course will focus on reading and analyzing primary sources from the fourth through the eighth centuries. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement.

417-3 Ritual and Revolt in Early Modern Europe. This course examines political practices on different levels of European society from the later middle ages through the Enlightenment: court ritual, popular revolts, patronage networks, representative assemblies, and family politics are among the topics covered. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement.

417H-3 Ritual and Revolt in Early Modern Europe. This course examines the social and political processes of ritual and revolt on different levels of European society from later middle ages to the French Revolution: court ritual, lifecycle rituals, religious rituals, popular protests, and revolution are among the topics covered. Honors students will select a topic to research during the course of the semester. Each student will lead the class in a discussion of his/her topic during the semester, and write a research proposal and annotated bibliography on that topic due at the end of the semester.

418-3 The Renaissance Exchange. Course employs the traditional Renaissance themes of economic, political and cultural developments in Italy and Europe from 1300-1550 as the framework for detailed examination of European interactions - economic, ideological, religious - with Asia, the Middle East and the Americas. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement.

420-3 Reformation. Concentrates on the movement of religious reforms in the 16th Century. Emphasis on its roots in the past, particularly in earlier expressions of popular piety and to the wider social and political effects in the 16th and 17th centuries. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement.

421-3 The French Revolution. This course will consider the causes, events and outcomes of the French Revolution and Age of Napoleon (1789-1815) and situate the revolution in a global context. Themes to be considered include the influence of the American Revolution and the Enlightenment, democracy and human rights, forms of popular and female protest, revolutionary culture, French imperialism and the fight for freedom in Haiti and the legacies of the revolution.

422A-3 Intellectual History of Modern Europe since 1600-1815. This course looks at European thinkers and intellectual movements from approximately 1600 to 1815. Topics include the Scientific Revolution, the Enlightenment, and early 19th Century Romanticism. The course also examines aesthetic and literary movements during the "Age of Reason".

422B-3 Intellectual History of Modern Europe since 1815. This course looks at European thinkers and intellectual movements

from the 19th Century to the present. Subjects include Marxism, Darwinism, Existentialism, Liberalism and Conservatism. The course also examines aesthetic and literary movements over the last two centuries, and it explores intellectuals and their links to the political movements to the modern age.

425-6 (3,3) Twentieth Century Europe. (a) Europe 1914–1945; (b) Since 1945. Political, social, cultural and economic development of the major European states during the present century.

426-3 Cities and Culture in Europe 1870–1914. Cultural and social history focusing on four European cities (Paris, Berlin, Vienna, St. Petersburg) in the Fin-de-Siècle period (1870-1914). Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement.

427-3 World War I. The first World War (1914-1918) from a variety of perspectives, with emphasis on cultural, social and political. Seminar-type format with discussions of topics such as the war's causes, nature of trench warfare, the home front, and political and cultural impact of the war. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement.

429 Political Violence in the Modern World. This course will look at various forms of state and political violence in the 19th and 20th centuries. We will start with the "Reign of Terror" in the French Revolution, then look at the rise of terrorism in the later 19th century. The course will also cover state violence in the 20th century such as WWI, the Shoah, the GULag. We will examine the "logic" and justification of both state and non-state political violence. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement.

437-3 Lesbian and Gay History in the Modern United States. (Same as WGSS 437) This course explores the social, political, and cultural history of lesbians, gay men, and other sexual and gender minorities in the United States from the turn of the twentieth century to the present. Themes to be taken up in this class include: the emergence of heterosexuality and homosexuality as distinct categories of identity; the intersection between sexual identity and identities of race, class, gender, and ethnicity; the relationship between homosexuality and transgenderism; the movement for gay liberation; the creation of lesbian and gay urban and rural subcultures; representations of homosexuality in popular culture; anti-gay backlash; and AIDS.

442-3 Victorian Britain: Politics, Society, and Culture. An examination of British politics, society, and culture examining political transformations from the Glorious Revolution to the Great War, industrialization and the emergence of a class society, Ireland and the British Empire in British culture, and Victorian culture. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement.

444-3 The Holocaust. An introduction to Nazi German's systematic mass murder of Europe's Jews and other minorities. Using works of history, literature, and film, we will examine such topics as anti-Semitism, the behavior of "ordinary Germans" during the 30s and 40s, Jewish resistance, Holocaust denial, and memory after the Holocaust.

447-3 Culture and the British Empire. This course will focus on the culture of modern British imperialism. It will examine the impact that the people and commodities of the empire as well as the practices of imperial rule had on modern British culture. The

emphasis of the course will be on the implications of “imperial culture” in mediating gender, race, and class relations within the broader empire as well as contemporary Britain. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement.

448-3 Gender and Family in Modern United States History. (Same as WGSS 448) This course explores the history of gender and the family in the United States from the late 19th century to the present. Themes to be explored include: the family and the state; motherhood; race and family life; and the role of “the family” in national politics.

450A-3 Colonial America. The evolution of American society from European settlement through the Age of Jefferson, with special emphasis on social and political institutions and thoughts.

450B-3 American Revolution. The evolution of American society from European settlement through the Age of Jefferson, with special emphasis on social and political institutions and thoughts.

451-3 Antebellum America. The struggle to define the nation in the political, economic and social realms; the emergence of women’s rights, slavery, sectional conflict from 1815 to 1860.

452-3 The Civil War and Reconstruction. (a) Civil War era; (b) the origins of modern America; reconstruction and nationalization; 1865-1896. The study of the background to the Civil War, the Civil War, Reconstruction and the Gilded Age.

455-3 The Conservative View in American History. Readings in American conservative thought, from the eighteenth-century to the present day, including traditionalist, neoconservative and libertarian writers. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement.

456-3 The United States in the 1960s. Examines the roots, events, ideas and legacies of the 1960s through readings in history and literature, and through films and music. Focus will be on the social protest movements of the era and their impact on American society. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement.

457-3 American Environmental History. (Same as Geography 457) An exploration of the attitudes toward and the interaction with the natural resource environment of North American by human settlers. Coverage from the Neolithic Revolution to the present.

458-3 Bantu Diasporas in Africa and the Atlantic World. (Same as AFR 458) This course examines the origins and development of Bantu language and culture groups in Africa and the Atlantic World from the first dispersal of Bantu-speaking people thousands of years ago through the end of slavery in the Americas. Additionally, the course explores the multiple methods and disciplines used to construct histories of Bantu language and culture groups.

460-3 Slavery and The Old South. (Same as AFR 460) This course examines slavery and southern distinctiveness from the colonial period to 1861. Discussion topics include the plantation system, race relations, women and slavery, and southern nationalism.

461-3 Black Americans on the Western Frontier. (Same as AFR 461) This course examines the history of African Americans in the American West. Taking both a chronological and thematic approach, it begins with a discussion of early black explorers in the age of encounter, and ends with a focus on black western

towns established in the United States by the 1880’s.

464-3 History of American Capitalism. This course examines the growth of the American economy, economic thought, the evolution of the firm, and the changing place of women and minorities in American business society. It also explores the intersection between business and other institutions in American life, including labor, law, literature, government, education and religion. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement.

465-3 History of Sexuality in America. (Same as WGSS 465) Comprehensive survey of sexuality from colonial times to the present. Examines social trends, politics, and cultural debates over various forms of sexuality. Students will engage in discussion, research and writing.

466-6 (3,3) History of the American West. (a) Trans-Appalachian Frontier; (b) Trans-Mississippi Frontier. The American frontier and its impact on American society from the colonial period to the 20th century.

467-6 (3, 3) History of American Thought to 1865 and since 1890. (a) To 1865; (b) Since 1890. Major themes include Puritanism, the Enlightenment, Romanticism, Darwinism, Pragmatism, Voices of Discontent, Neo-orthodoxy, liberalism, conservatism, and formulating the modern conscience. Approved as Writing-Across-the-Curriculum course.

470-3 Continuity and Change in Latin America. An in-depth examination of major topics in the history of Latin America since pre-Columbian times, especially themes that have been prominent in recent scholarship. Lectures will be supplemented by outside readings and class discussion.

471-3 History of Modern Japan. An examination of Japanese History from the early Tokugawa period to the present. Major topics include the creation of the Japanese bureaucracy, commercialization and industrialization, and cultural experimentation.

473-3 Comparative Slavery. (Same as AFR 473) A comparative study of slavery from antiquity to its abolition in the 19th century with the differing socio-cultural, political and economic contexts; organized chronologically, regionally and thematically.

478-3 Southern Africa, 1650-1994. (Same as AFR 478) An examination of Southern African history with emphasis on South Africa from 1652 to 1994. Topics to be covered include conflicts and wars, migrations and state formations, the economics of minerals, industrialization and the Anglo-Boer War, intertwined histories of race relations, the politics of exclusion and apartheid, and the making of modern South Africa.

479-3 The Cultural Revolution. This course explores the origins, major developments, and social, economic, cultural and psychological legacies of the Great Proletarian Cultural Revolution in China from 1966 to 1976 by critically examining relevant official documents, personal memories, oral histories, literary and artistic works, and films and material objects. All required readings are in English. Open to both graduate students and advance undergraduate students. Prior knowledge of modern Chinese history helpful but not required.

480-6 (3,3) History of China. (a) Late Imperial China, 1350 to 1890; (b) Twentieth Century China, 1890 to the present. An in-depth examination of political, economic, social, and cultural history of China from 1350 to the present. The first

semester examines the imperial state, gentry and peasants, commercialization and social change in China from 1350 to 1890. The second semester focuses on nation building, ideology and rural-urban culture in 20th Century China.

485-3 Revolutions in the Middle East. (Same as HIST 485H)

This class examines aspects of revolutions and revolutionary attempts in the history of the modern Middle East. Recognizing revolution as a global phenomenon, it begins by considering a variety of historical and theoretical approaches to understanding revolutions. It asks questions such as what constitutes a revolution, what contexts and causes lead to revolutions, and what effects revolutions engender. It then examines revolutions in the modern Middle East more closely by focusing on several specific cases such as Ottoman and Iranian constitutional revolutions, the secular revolutionary experiment in early twentieth-century Turkey, attempts at a socialist revolution in the Arab world, the Islamic Revolution in Iran, and the Arab Spring.

485H-3 Revolutions in the Middle East. (Same as HIST 485)

This class examines aspects of revolutions and revolutionary attempts in the history of the modern Middle East. Recognizing revolution as a global phenomenon, it begins by considering a variety of historical and theoretical approaches to understanding revolutions. It asks questions such as what constitutes a revolution, what contexts and causes lead to revolutions, and what effects revolutions engender. It then examines revolutions in the modern Middle East more closely by focusing on several specific cases such as Ottoman and Iranian constitutional revolutions, the secular revolutionary experiment in early twentieth-century Turkey, attempts at a socialist revolution in the Arab world, the Islamic Revolution in Iran, and the Arab Spring. Honors students will complete an extra project for this course. Not open to freshman.

486-3 Arab-Israeli Conflict. This course focuses on the background to, and current dimensions of, the continuing conflict between Israel, the Palestinians and the rest of the Arab world. Beginning with origins of Zionism in the late nineteenth century, it examines, the foundation of Israel, Palestinian responses, and relations between Israel and its Arab neighbors.

487-3 The U.S. Civil Rights Movement. (Same as AFR 497)

This course provides an overview of the history of the Civil Rights Movement while engaging major debates in the field of Black Freedom Studies. Central themes will include the impact of the Cold War, the roles of women, and the relationship of civil rights to black power. We will also discuss the difference between popular memory and historical scholarship as well as the meaning of such discussions for contemporary issues of racial and economic justice.

488-3 Islamic Political Movements. This course examines the use of Islamic ideals and rhetoric in social and political movements in the Middle East from the nineteenth century to the present. It focuses on political parties such as the Muslim Brotherhood in Egypt, the Welfare Party in Turkey, and Hamas in Palestine.

489-3 Women, State and Religion in the Middle East. (Same as WGSS 489) Following an introduction to the question of women in Islamic law and Islamic history, this course will examine the changing status and experiences of women in a number of Middle Eastern countries in the 20th century, focusing on

Egypt, Iran, and Turkey. Major themes will include legal, social and political rights, participation in social and economic life, cultural and literary production, and recent secular and Islamist women's movements.

490-1 to 4 Special Readings in History. Supervised readings for students with sufficient background. Registration by special permission only.

491-3 Historiography. Writings of historians from Herodotus to the present.

493-1 to 6 Topics in History. Topics vary with instructor. May be repeated for a maximum of six semester hours provided registrations cover different topics. Topics announced in advance.

496A-1 to 9 Internship in History. Supervised field work in public or private agencies or operation where history majors are frequently employed, such as archives and libraries, government offices, communications media, historic sites and museums. Only three hours may be applied to the major and six hours toward the M.A. degree. Special approval needed from the instructor.

496B - 1 to 9 Internship in Local History. (Same as ARC 434) Field experience in research and preservation related to regionally and nationally recognized historic sites in southern Illinois. Special approval needed from the instructor.

497-3 Historical Museums, Sites, Restorations and Archives.

The development of museums from antiquity to the present, with emphasis on the United States. Additional topics include historical sites such as battlefields, historic buildings, restorations, monuments and archives. Also examines the purposes and functions of the museum and the tasks of professionals employed in museums of interpretative centers. Given in cooperation with the University Museum.

498-3 Oral History, Storytelling, and Media. (Same as RTD 455)

This course will develop an appreciation of the field of oral history, methodological concerns, and applications. Students will learn about the oral history process, including interview preparation and research, interview technique, the nature and character of evidence, transcribing, and legal and ethical concerns. Restricted to Junior or Senior standing.

500-3 The Historian's Craft. Examination of historical methodology and recent trends in historiography. How historians conduct research and convey the results of it. Special treatment of selected topics of historiography. Required of M.A. degree students. Ph.D. degree students should consult graduate advisers.

501-4 Recent Historiography. Trends in historical writing and historical interpretation in the 20th Century. Required of M.A. degree students. Ph.D. degree students should consult graduate advisers.

522-4 to 8 (4 per semester) Colloquium in European History.

Group reading and discussion about major periods, subregions and themes in European history. May be repeated as instructors and topics vary.

523-4 to 20 (4 per semester) Research Seminar in European History.

Research and writing on selected topics in European history. Students will prepare a major paper. May be repeated as topics and instructors vary.

551-4 to 8 (4 per semester) Colloquium in Middle East History.

Group reading and discussion about major periods, subregions,

and themes in the history of the Middle East and the Islamic world. May be repeated as topics vary.

552-4 to 8 (4 per semester) Research Seminar in Middle East History. Research and writing on selected topics in the history of the Middle East and the Islamic world. Students will prepare a major paper. May be repeated as topics vary.

554-4 to 8 (4 per semester) Colloquium in United States History. Group reading and discussion about major periods, subregions and themes in United States history. May be repeated as topics and instructors vary.

555-4 to 20 (4 per semester) Research Seminar in United States History. Research and writing on selected topics in United States history. Students will prepare a major paper. May be repeated as topics and instructors vary.

570-4 to 12 (4 per semester) Research Seminar in Latin American History. Research and writing on selected topics in Latin American history. Students will prepare a major paper. May be repeated as topics vary.

571-4 to 8 (4 per semester) Colloquium in Latin American History. Group reading and discussion about major periods, subregions and themes in Latin American history. May be repeated as instructors and topics vary.

580-4 to 12 (4 per semester) Research Seminar in Asian History. Research and writing on selected topics in Asian history. Students will prepare a major paper. May be repeated as topics vary.

581-4 to 8 (4 per semester) Colloquium in Asian History. Group reading and discussion about major periods, subregions and themes in Asian history. May be repeated as instructors and topics vary.

582-4 to 8 (4 per semester) Colloquium in World History. Group reading and discussion about major periods, subregions and themes in world history. May be repeated as instructors and topics vary.

583-4 to 12 (4 per semester) Research Seminar in World History. Research and writing selected topics in World History. Students will prepare a major paper. May be repeated as topics vary.

584-4 to 8 (4 per semester) Colloquium in Comparative History. Group reading and discussion relating to cross-cultural or other comparative approaches in history. May be repeated as instructors and topics vary.

585-4 to 8 (4,4) Research Seminar in Comparative History. Research on selected topics employing cross-cultural or other comparative approaches. Students will prepare a major paper. May be repeated as topics vary.

586-4 to 8 (4 per semester) Colloquium in African History. Group reading and discussion about major periods, subregions and themes in African history. May be repeated as instructors and topics vary.

587-4 to 12 (4 per semester) Research Seminar in African History. Research and writing on selected topics in African history. Students will prepare a major paper. May be repeated as topics vary.

590-1 to 8 (1 to 3 per semester) Readings in History. Individual readings. Registration by special permission only. Student must obtain the consent of the faculty member involved. M.A. degree students are limited to a maximum of 4 hours toward the 30-hour requirement. Graded *S/U* only. Registration by

special permission only.

596-3 Tutorial in History. Research and writing in history in close consultation with an instructor to produce a major paper on a selected topic. This course may count toward graduation as a seminar and the paper will be placed on file in the Department of History. Students may take this course only once at the M.A. level and once at the Ph.D. level. Special approval needed from the director of graduate studies.

597-1 to 9 (1 to 3 per semester) Practicum in Teaching College-Level History. Students will learn how to lead discussion sections and/or to teach independent courses at the college level. M.A. or Ph.D. students assigned for the first time as a discussion leader must take this course. The course also is required for Ph.D. students who are teaching their own courses for the first time. Graded *S/U* only. Restricted to graduate students in history. Special approval needed from the director of graduate studies.

598-1 to 9 Graduate Internship in History. Supervised field work in occupationally related fields in public history, teaching, university publishing, historical editing. Programs of field work will be designated by students in consultation with their advisory committees. Students at the Ph.D. level can take as many as 9 hours in the course of their studies. Graded *S/U* or *DEF*.

599-1 to 6 Thesis. Minimum of three hours to be counted toward a Master's degree.

600-1 to 30 (1 to 16 per semester) Dissertation.

601-1 per semester Continuing Enrollment.

Histotechnology

<http://www.siumed.edu/anatomy/HistoCert.htm>

SCHOOL OF MEDICINE

Certificate in Histotechnology

Histotechnology is a structural science that incorporates elements from anatomy, physiology, immunology and chemistry. Histology is the science dealing with the structure, function and chemical composition of cells of normal and abnormal tissue. The histotechnologist prepares tissue specimens for microscopic examination. Histologic techniques utilize the chemical properties of both tissues and dyes to impart color to particular tissue elements to aid identification and disease diagnosis. Histology is an applied laboratory science, whose practitioners are in great demand in the current job market. A certificate in Histotechnology provides intense training in histotechnology through a combination of lectures, hands-on laboratory experience and clinical internships. Some of the certification requirements can be completed with proper selection of courses as University Core Curriculum substitutes and by using elective courses to fulfill certification requirements. Students are encouraged to discuss their interests with a departmental representative to obtain additional information.

This program admits a limited number of students based on specific selection criteria. Applicants must submit additional application materials to be approved for entry into the Histology certificate program. Students will be evaluated on the number of hours of college credit, and college grade point average as calculated by SIU. Students begin the professional sequence each fall only. This certificate program requires the successful completion of clinical internships. In accordance with Federal and State guidelines, the clinical sites will require proof of the following: vaccination for measles, mumps, rubella, tetanus, TB, and Hepatitis B; current CPR card; and proof of completion of HIPPA and blood-borne pathogens training. Affiliation sites may also require students to undergo a criminal background check and drug screening.

Courses (HTL)

400-5 Histotechnology Practicum I. Designed to introduce students to the basic procedures used in the Histology laboratory. The student studies the principles and theories of fixation and staining processes. Practice and skill are developed in tissue processing, embedding, sectioning and routine staining. Laboratory safety and regulatory compliance will be included. Lecture is 2 hours; laboratory is 6 hours/week. Special approval needed from the instructor.

401-5 Histotechnology Practicum II. This course is designed to build on the knowledge and skills learned in HTL 400 to introduce students to more advanced aspects of histological procedures used in clinical and research settings. The course will reinforce standard histological practices and include immunohistochemistry and transmission electron microscopy. Lectures are integrated with hands-on lessons providing students both basic knowledge and practical experience. 2 hours lecture; 6 hours lab/week. Must be accepted into the HTL certificate program. Prerequisite: HTL 400 (Histotechnology

Practicum I) with a minimum grade of *B*.

402-3 Special Topics in Histotechnology. The course focuses on microscopy-based methods used in today's research. Topics can include confocal/fluorescence microscopy, laser capture microdissection and specialized techniques for water miscible plastics. Lectures are integrated with hands-on lessons providing students practical experience. Lecture 1 hour; Lab 4 hours. Prerequisite: Histotechnology Practicum I & II (HTL 400 & 401) with a minimum grade of *B*.

403-2 Laboratory Management and Regulatory Compliance. This course covers the principles of laboratory management and regulatory safety requirements. OSHA's standard for the laboratory safety that incorporates the chemical hygiene plan will be covered. The class will focus on regulations regarding bloodbournes and other potential infectious materials. HIPPA, Ergonomics, DOT and EPA guidelines will be discussed.

404-3 to 6 Occupational Histotechnology Internship I. Internships are scheduled at clinical or research affiliate sites throughout Illinois during the daytime hours in accordance with the schedule of the assigned site. The curriculum will include both daily instruction and corresponding laboratory experience. In an occupational setting, the histotechnologist is not isolated; he/she interacts with other areas besides histology. The internship provides practical hands-on experience that prepares the student for a career as a histotechnologist. Internship 18 hours/16 week semester or 36 hours/8 week summer semester. Course can be taken for 2 semesters at 3 credits. Must be accepted into the HTL certificate program. Prerequisites: HTL 400 and HTL 401 with minimum grades of *B*.

405-3 to 6 Occupational Histotechnology Internship II. Internships are scheduled at clinical or research affiliate sites throughout the United States in accordance with the schedule of the assigned site. The curriculum will include both daily instruction and corresponding laboratory experience. In a hospital or research/industrial setting, the histotechnologist is not isolated; he/she interacts with other areas besides histology. The internship provides additional hands-on experience in an occupational setting that prepares the student for a career as a histotechnologist. Internship 18 hours/16 week semester or 36 hours/8 week summer semester. Course can be taken 2 semesters for 3 credits. Must be accepted into the HTL certificate program. Prerequisites: HTL 400, 401, 404 with minimum grades of *B*.

Interactive Multimedia

(See Mass Communication and Media Arts for program description.)

Journalism

(See Mass Communication and Media Arts for program description.)

Kinesiology

<http://ehs.siu.edu/kinesiology/>

COLLEGE OF EDUCATION AND HUMAN SERVICES

Graduate Faculty:

- Ackerman, Kenneth**, Assistant Professor, *Emeritus*, M.A., Michigan State University, 1959; 1969.
- Anton, Philip M.**, Associate Professor, Ph.D., University of Northern Colorado, 2006; 2007. Exercise Physiology.
- Becque, M. Daniel**, Associate Professor, Ph.D., University of Michigan, 1988; 1990. Exercise Physiology.
- Blinde, Elaine M.**, Professor, *Emerita*, Ph.D., University of Illinois, 1987; 1987.
- Brechtelsbauer, Kay**, Assistant Professor, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1980; 1965.
- Good, Larry**, Associate Professor, *Emeritus*, Ed.D., Temple University, 1968; 1967.
- Knapp, Bobbi**, Associate Professor, Ph.D., University of Iowa, 2008; 2009. Sport Studies.
- Knowlton, Ronald**, Professor *Emeritus*, Ph.D., University of Illinois, 1961; 1961.
- Olson, Michael**, Associate Professor, Ph.D., Louisiana State University, 2006; 2006. Biomechanics.
- Park, Meungguk**, Associate Professor, Ph.D., The Ohio State University, 2005; 2005. Sport Management.
- Partridge, Julie**, Associate Professor, Ph.D., University of Northern Colorado, 2003; 2004. Sport and Exercise Psychology.
- Porter, Jared**, Associate Professor, Ph.D., Louisiana State University, 2008; 2008. Motor Behavior.
- Potter, Marjorie Bond**, Professor, *Emerita*, Ph.D., University of Southern California, 1958; 1961.
- Vogler, E. William**, Professor, *Emeritus*, Ed.D., University of Utah, 1980; 2011. Physical Education Teacher Education.
- Wallace, Julianne**, Associate Professor, *Chair*, Ph.D., Iowa State University, 2004; 2004. Exercise Physiology.
- West, Charlotte**, Professor, *Emerita*, Ph.D., University of Wisconsin, 1969; 1957.
- Wilson, Donna**, Associate Professor, *Emerita*, M.F.A., University of Oklahoma, 1975; 1986. Dance.
- Yoh, Taeho**, Associate Professor, Ph.D., Florida State University, 2001; 2001. Sport Management.

Graduate courses in kinesiology are offered toward the Master of Science in Education degree with a major in kinesiology.

Two study tracks are available:

1. Sport Studies (with specializations in Sport Management, Social Psychology of Sport)
2. Exercise Science (with specializations in Biomechanics, Exercise Physiology, Motor Behavior)

Options for Sport Studies Program (37 Hours)

Requires a minimum of 31 semester hours of credit plus one of the following 6-hour options:

- Thesis — KIN 599, 6 hours
- Research Project — KIN 592, 3 hours
- Additional Class, 3 hours
- Professional Development Project — KIN 594, 3 hours
- Additional Class, 3 hours

- Internship — KIN 555, 6 hours

The following are required courses in Sport Studies: KIN 501, KIN 504, KIN 513, KIN 550, (or approved substitutes).

Options for Exercise Science Program (37 Hours)

Requires a minimum of 31 semester hours of credit plus one of the following 6-hour options:

- Thesis — KIN 599, 6 hours
- Research Project — KIN 592, 3 hours
- Additional Class, 3 hours

The following are required courses in Exercise Science: KIN 511, KIN 520, KIN 525, KIN 530 (or approved substitutes).

Criteria for Unconditional Admission

1. Admission to the Graduate School which requires a 2.70/4.00 for all work leading to a completed bachelor's degree and a completed application form, a resume, and a cover letter.
2. Three completed "Request for Recommendation" forms provided by the Graduate School.
3. A review of the application by the appropriate faculty and a willingness of a faculty member to serve as the program advisor for the applicant.
4. This program requires a nonrefundable application fee that must be submitted with the online application for Admission to Graduate Study in Kinesiology. Applicants must pay this fee by credit card.

A degree in Kinesiology is not required for admission into the graduate program. An individual program in Exercise Science or Sport Studies will be developed for the student. Completed applications are reviewed as they are received. Up to but not exceeding 12 hours of B grade or higher transfer credits will be considered by the department for application to the course work requirement and, for advisement purposes, should be considered during the first semester in the program.

Requirements

All students are required to take KIN 500, Techniques of Research, and a graduate class in statistical procedures. Additional requirements for the degree are specific to the respective areas of either Exercise Science or Sports Studies. All students not doing a thesis or other culminating projects must pass a comprehensive examination which may be taken after the major portion of the course work has been completed. If the research project option is selected, submission of the completed Research Project must comply with the rules of the Graduate School. If the thesis option is selected submission of the thesis will be electronic and must comply with the rules of the Graduate School.

Graduate Assistantships

A limited number of graduate assistantships are available on a competitive basis to students in a degree program. The Graduate Teaching Assistantships are for instruction in the undergraduate program and are available to applicants who have appropriate qualifications relevant to the teaching area. Applications may be obtained from the Chair of the Department of Kinesiology and they are reviewed by a committee

independently of the admissions process. In order to hold a graduate assistantship, a student must be registered as a full time student (8 hours, fall/spring; 3 hours, summer) during the semester of appointment.

Courses (KIN)

Courses in this department may require the purchase of supplemental materials.

400-3 Psychology of Injury. This course will explore the theory and research related to the psychological aspects of injury and injury rehabilitation. The focus is on theory and application. Case studies will be used to explore assessment and intervention approaches relevant for different levels of athletic training, sports medicine and sport psychology professionals.

402-2 Exercise Programming for Cancer Survivors and Caregivers (Strong Survivors Staff Training) The primary goal of this course is to give both graduate and undergraduate students the necessary tools to successfully prescribe and administer safe and effective exercise programs and assessments for cancer survivors and caregivers as a staff member for the Strong Survivors Exercise and Nutrition Program for Cancer Survivors and Caregivers. The course will also give students a baseline of knowledge that will help prepare them to sit for cancer exercise trainer certification exams. Special approval needed from the instructor.

407-3 Rehabilitation of Athletic Injuries. This course provides the athletic training student with the theoretical background and practical application of principles and techniques of rehabilitation of athletic related injuries. This course also includes laboratory experiences in rehabilitation of athletic related injuries. Restricted to admission into Athletic Training Education Program or permission of instructor. Laboratory fee: \$50.

408-3 Advanced Exercise Prescription. Advanced exercise prescription provides an analysis of physical fitness as it relates to the total well-being of the individual. The course contains specific units on fitness parameters, hypokinetic disease, stress, current levels of physical fitness, but emphasizes the creation of training programs. The course contains exercise prescription for healthy, at risk, overweight and chronically ill populations. Prerequisite: KIN 382 and KIN 320.

416-2 Introduction to Team Building. The purpose of this course is to acquaint students, teachers, coaches and administrators with the "team building model". The course will focus on icebreakers, trust and communication initiatives, problem solving skills and processing. The goal of this introductory course is for the participants to become familiar and acquire team building skills, to develop a workable team building model and initiate the plan in the classroom or workplace.

418-2 Administration of Aquatics. The study of comprehensive aquatic programs, their implementation and coordination.

420-3 Advanced Exercise Physiology. The general physiological effects of motor activity upon the structure and function of body organs; specific effect of exercise on the muscular system. Requires purchase of laboratory manual. Prerequisite: Physiology 201 and KIN 320.

421-3 Principles of Skeletal Muscle Action. The neural, physiological and mechanical basis of skeletal muscle action

and plasticity in relation to the expression of strength and power. Prerequisite: Physiology 201 and KIN 320.

426-3 Research in Athletic Training. Specifically designed for the student who wishes to become an athletic trainer and gain knowledge in the application and current research in therapeutic modalities.

427-3 Organization and Administration in Athletic Training. This course is designed to study and discuss the concepts of organization and administration in the health care of athletes and physically active individuals. Restricted to admission into the Athletic Training Education Program or consent of instructor.

428-3 Physical Activity and Exercise for Older Adults. (Same as GRON 428) This course is designed to introduce the student to physical changes of the older person with reference to activity and exercise and to teach the student about rational activity and exercise programs for the older person with consideration of the care and prevention of typical injuries that may occur with such programs.

493 A-I - 2 to 4 Individual Research. The selection, investigation, and writing of a research topic under supervision of an instructor. (a) Dance. (b) Kinesiology. (c) Measurement. (d) Motor development. (e) Physiology of exercise. (f) History and philosophy. (g) Motor learning. (h) Psycho-social aspects and (i) Sport management. Written report required. Restriction: Consent of instructor.

494 A,B - 2 (1,1) Practicum in Kinesiology. Supervised practical experience at the appropriate level in selected kinesiology activities in conjunction with class work. Work may be in the complete administration of a tournament, field testing, individual or group work with special populations, administration of athletics or planning kinesiology facilities. Restriction: Consent of instructor.

500-3 Techniques of Research. Study of research methods and critical analysis of research literature specifically applied to the areas of sport exercise and motor performance. Restriction: Consent of instructor.

501-3 Foundations of Sport and Fitness Management. An introduction to broad concepts and issues regarding the management of health clubs, corporate fitness programs; and various components of amateur and professional sport organizations. Students will investigate foundational aspects of sport and fitness management, examine requirements for operating successful programs, and gain insight into various career opportunities.

502-3 Methods of Interview Research. This course will familiarize students with the theory and techniques of interview research and demonstrate the application of this research method to practice. Students will engage in a group interview project focusing on a selected issue and an individual project utilizing interview research in their specialty area. No prerequisites required.

503-2 Seminar in Kinesiology. Making a systematic analysis of problems and issues encountered in the conduct of kinesiology. Selection of a problem or issue that is a concern to Kinesiology and suggestion of solutions.

504-3 Psychological Aspects of Sport. This course presents the theoretical and empirical foundations of sport psychology. Operating from a conceptual rather than an applied framework,

this class develops an understanding of social psychological phenomena and processes related to participation in sport and physical activity (e.g., personality, anxiety, arousal, achievement motivation, social facilitation, aggression, pro-social behavior, group dynamics).

505-3 to 12 (3 per topic) Topical Seminar in Kinesiology. Students may concentrate on different topics each semester dependent upon both the interests of the students and the expertise of the graduate faculty. Special approval needed from the instructor.

506-3 Medical Aspects of Fitness. This course is a presentation/discussion style course in which students will examine and discuss the principles of exercise testing and prescription for individuals from a wide variety of disease/disability backgrounds. Discussion will include issues of caution/contradiction for various forms of exercise, the role of exercise as a therapeutic modality and exercise as a means of preventive medicine. Prerequisite: KIN 420.

507-3 Organizational Behavior in Sport. This course provides students with an examination of fundamental theories and practices related to behavior of individual and groups in sport organizations. The focus will be on the practical application of the theories to the actions of sport and physical activity managers. Special emphasis will be on: ethics in organizations, leadership, managerial decision making, motivation, organizational commitment, and managing a diverse work force.

508-3 Administration of Athletics. Designed to present a broad view of the role, structure and governance of interscholastic and intercollegiate athletics programs. This course will enable students to develop and comprehend current knowledge, theories and practices in athletic management which operate within a framework of state and national governance policies and rules.

510-3 Motor Development. In-depth study of the development of gross motor skills from infancy through adolescence, the biological and environmental variables that affect motor development, and individual differences in attaining motor proficiency. In addition, selected current issues in motor development will be examined. No prerequisite.

511-3 Biomechanical Analysis of Human Movement. Biomechanical concepts will be reviewed, as well as discussion concerning tissue mechanics, and the integration of the neural control of movement. Importance will be placed on application of mechanical principles when analyzing basic human movements. Includes completion of a topical research paper. Prerequisite: KIN 321 or equivalent.

512-3 Biomechanics of Human Motion. Methods of data collecting and analyzing the biomechanics of human motion under normal and pathological conditions are covered. Students complete a biomechanical study for a one segment motion.

513-3 Social Aspects of Sport and Physical Activity. This course presents the theoretical and empirical foundations of sport sociology. It is a survey course designed to introduce you to a variety of topics concerned with sociological aspects of sport and physical activity. A research-based approach is used to explore the relationship of sport to various social institutions, as well as the role of social processes in sport and physical activity contexts.

514-3 Research and Practice in Applied Sport Psychology.

This course examines current research and practice in applied sport psychology. Emphasis will be placed on moving from theory into practice on sport-specific individual differences, motivational approaches and interventions.

515-3 Body Composition and Human Physical Performance. Physical dimensions of the human body as they influence motor performance and are modified by protracted physical exercise. Prerequisite: KIN 420 or equivalent.

517-3 Athletic and Kinesiology Facilities Design, Construction, and Maintenance. This course examines the principles and states of planning to manage an Athletic and Kinesiology facility. Basic principles of design, construction, maintenance and how to manage facilities based upon program characteristics.

520-3 Metabolic Analysis of Human Activity. Metabolic principles pertinent to human physical performance with emphasis on sport, exercise and occupational activity analysis. A detailed study of oxygen utilization, oxygen debt, mechanisms of oxygen transport as they relate to physiological homeostasis in localized and total body motor activity. Emphasis on the laboratory study of aerobic and anaerobic performance. Prerequisite: KIN 420 or equivalent.

525-3 Motor Learning-Theories of Research. This course will provide a theory and research foundation for understanding motor skill acquisition and factors that influence the learning of motor skills. This foundation is important to develop research understanding of motor skill learning, and to design effective practice conditions that enhance learning. Various topics related to the cognitive and motor processes influencing motor skill learning will be discussed.

530-3 Exercise Psychology. This course explores the theory and research related to the psychological and social aspects of exercise and how exercise may impact the individual's psychological health and behavior. The focus is on theory and application. It covers theories and models of exercise behavior, psychosocial outcomes of exercise, social factors in exercise behavior, and physical activity interventions.

540-3 Sport Promotions. This course provides the theoretical foundation of promotions specific to the sport industry. It will include professional applications to profit and non-profit sport organizations.

550-3 Legal Aspects of Sport and Physical Activity. A course designed to acquaint student with legal research and the role that law plays in governing the kinesiology, sport and fitness industries. The student will actively research various theories of law and how they affect the nature of kinesiology, sport fitness activity, the participants and consumers. An additional focus will be on specific situations that give rise to injury and subsequent law suits.

555-1 to 6 Internship in Sport Management. The internship is a culminating experience directly related to the student's intended employment or area of interest. It will, therefore, normally be taken after the predominance of course work is completed. The internship may be completed in any appropriate setting as judged by the faculty associated with the area of sport management. All conditions of placement, conduct and evaluation of the internship will be under the jurisdiction of the appropriate faculty. Graded S/U only. Restriction: Consent of instructor.

560-3 Gender and Sport: Sociological and Psychological

Perspectives. (Same as WGSS 560) This course explores psychological and sociological dimensions underlying the concept of gender and critically examines how gender relates to sport and physical activity. Students will be introduced to non-traditional as well as traditional research that addresses the issue of gender in various physical activity contexts.

580-3 Financial Aspects of Sport. The primary goal of this course is to provide students with a basic knowledge and understanding of the principles, processes, and strategies related to the financial aspects of sport organizations, which consist of professional sport franchises, college athletic departments, community recreation programs, etc. The focus will be on the many conventional and innovative revenue acquisition methods applicable to sport oriented organizations. In addition to the basic accounting concepts and budgeting techniques, this course will address current topics in the field of sport financing, including: tax support, municipal and corporate bonds, economic impact analysis, fundraising, licensing, ticket sales, concessions, and corporate sponsorships.

590-1 to 4 Readings in Kinesiology. Supervised readings in selected subjects. Restriction: Consent of instructor.

592-2 to 8 Research in Kinesiology. Plan, conduct, and report assigned research studies. Masters students may take up to three credit hours. Doctoral students must enroll for a minimum of six credit hours. Graded *S/U* only. Prerequisite: KIN 500 or equivalent. Restriction: Consent of instructor.

594-3 Professional Development Project. Supervised independent work leading to the production of a professional development project that can be utilized in the student's professional career. The exact nature of the project is to be determined by the student and the respective graduate advisor. An additional graduate faculty member in the student's area of study also must approve the project before the student begins work. Graded *S/U* only. Restriction: Consent of instructor.

599-1 to 6 Thesis. Graded *S/U*. Prerequisite: KIN 500 or equivalent.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Languages, Literatures, and Cultures

COLLEGE OF LIBERAL ARTS

www.languages.siu.edu/
forlang@siu.edu

Graduate Faculty:

Albuxech, Lourdes, Associate Professor, Ph.D., University of California, Riverside, 1997; 1997.

Allen, Mont, Assistant Professor, Ph.D., University of California, Berkeley, 2014.

Betz, Frederick, Professor, *Emeritus*, Ph.D., Indiana University, 1973; 1978.

Bricker, Mary, Assistant Professor, Ph.D., University of Illinois Urbana-Champaign, 2011.

Cáceres, Alejandro, Associate Professor, Ph.D., Indiana University, 1992; 1994.

Daffner, Carola, Associate Professor, Ph.D., Vanderbilt University, 2007.

Hammond, Charles E., Associate Professor, *Emeritus*, Ph.D., Columbia University, 1986.

Hartman, Steven Lee, Associate Professor, *Emeritus*, Ph.D., University of Wisconsin, 1971; 1971.

Haubenreich, Jacob, Assistant Professor, Ph.D., University of California, Berkeley, 2013.

Johnson, David, Associate Professor and *Chair*, Ph.D., University of North Carolina at Chapel Hill, 1996; 1997.

Keller, Thomas, Associate Professor, *Emeritus*, Ph.D., University of Colorado, 1975; 1975.

Kim, Alan Hyun-Oak, Associate Professor, Ph.D., University of Southern California, 1985; 1988.

Liedloff, Helmut, Professor, *Emeritus*, Ph.D., Phillips University, Germany, 1956; 1959.

Maisier, Véronique, Associate Professor, Ph.D., University of Paris IV Sorbonne, 1998; 1999.

Meinhardt, Warren, Associate Professor, *Emeritus*, Ph.D., University of California, Berkeley, 1965.

O'Brien, Joan, Professor, *Emerita*, Ph.D., Fordham University, 1961; 1969.

Smith, Jennifer, Assistant Professor, Ph.D., Indiana University, 2005; 2006.

Speck, Charles, Assistant Professor, *Emeritus*, Laurea in Diritto Canonico, Pontifical Lateran University, Italy, 1963; 1970.

Taoka, Yasuko, Assistant Professor and *Chair*, Ph.D., The Ohio State University, 2007.

Timpe, Eugene F., Professor, *Emeritus*, Ph.D., University of Southern California, 1960; 1972.

Ulner, Arnold R., Assistant Professor, *Emeritus*, Ph.D., University of Missouri, 1972; 1970.

Williams, Frederick, Associate Professor, *Emeritus*, Ph.D., Cornell University, 1976.

Winston-Allen, C. Anne, Professor, *Emerita*, Ph.D., University of Kansas, 1979; 1991.

Wu, Shu-Ling, Assistant Professor, Ph.D., Cornell University, 1976.

The Department of Languages, Cultures, and International Trade offers a Master of Arts degree in Languages, Literatures, and Cultures with a specialization in either French or Spanish. The degree program includes courses in literature, linguistics, translation, pedagogy, and instructional technology, and allows for considerable breadth of study while offering a well-balanced

degree plan.

Admission

A non-refundable application fee of \$65.00 must be paid with credit card when applying through ApplyYourself (AY).

In addition to meeting requirements of the Graduate School, the applicant for admission should have a Bachelor's Degree with a major in the appropriate language of specialization or at least 18 semester hours (27 quarter hours) of relevant courses in the language at the junior-senior level. Students not meeting minimum requirements in coursework or in language proficiency may be given the option of taking additional coursework to make up the deficiency before being officially accepted to the program. These courses will not count towards fulfilling the degree requirements. Students who meet requirements for admission to the Graduate School but do not meet the departmental requirements may register as unclassified students for specific graduate courses in the department only with consent of the instructor and authorization from the Director of Graduate Studies.

General Requirements

1. Students must take 33 credit hours of coursework that must include:

FL 436

FR/SPAN 501

FR/SPAN 570

3 classes of literature

4 additional classes of literature/culture (for Spanish students, at least one of these courses must be in Latin American Literature, and at least one in Peninsular Literature).

Three hours of Independent Study will be given only under exceptional circumstances and will not duplicate available courses. The Director of Graduate Studies is responsible for authorizing such work in cooperation with the individual professor.

2. Comprehensive Examinations

The French comprehensive exams will be based on the courses taken. The Spanish comprehensive examinations will be based on the program reading list. While many of the works on the reading list will be covered in classes, others will not. Consequently, students are expected to exhibit a breadth of knowledge that goes beyond what is covered in their classes.

For more detailed information on the format of the exam, consult with the Director of Graduate Studies.

Each year a faculty member from the MA program will be in charge of the preparation, organization, scheduling, and proctoring of examinations.

Repeat Policy

Re-takes for failed examinations may be scheduled for the following November, April, or August. Students will be given an entirely new exam. If the student does not pass the second time, s/he will be required to take an additional 9 credit hours in Peninsular and Latin American literature/

culture before being allowed to retake the exam for the third and last time.

NOTE: Students pass or fail the entire exam, not a singly question or area. Students receiving a Graduate Assistantship who do not pass the exam the first time are not guaranteed additional funding.

Traditional MA

This option allows students to complete the MA in two years without having to take courses in the summer and/or without having to pursue a BA in our department (although students may chose to do either or both). Students must be accepted into the program prior to commencing coursework towards the degree:

First Semester:

3 courses

Second Semester:

3 courses

Third Semester:

3 courses

Fourth Semester:

2 courses

Comprehensive Examinations

Five year BA/MA

This option allows students in the SIU Carbondale Spanish BA program to **transfer 9 credits of 400- or 500- level language courses** over to the MA degree. Students enrolled in our BA program who have maintained a 3.25 grade point average in 300- and 400- level courses may apply to the 5-year MA at the end of their junior year. If they are accepted, they continue on with their coursework for another year (including two summers) after graduating with the BA.

First Summer Session:

1 course

First Semester (Fall):

3 courses

Second Semester (Spring):

3 courses

Second Summer Session:

1 course

Comprehensive Examinations

Or

First Summer Session:

1 course

First Semester (Fall):

3 courses

First Semester (Spring):

3 courses

Comprehensive Examinations

Second Summer Session:

1 course

Double Majors

Students may pursue a double major in Languages, Literatures, and Cultures together with an MA in another program. Consult "Double Major for a Master's Degree" in the Degree Requirements section of this catalog for Graduate School requirements for double majors. In addition to meeting the Graduate School requirements, double majors must complete a minimum of 21 credit hours of coursework in the Department of Languages, Cultures, and International Trade, 18 of which must be in the language of study.

Curriculum Planning

Prior to registering, students are required to plan their curriculum with the Department's Director of Graduate Studies who will advise the student in all matters pertaining to his/her M.A. Program.

Pertaining to Courses

At least 15 hours of course work must be earned in courses at the 500 level or above, and a minimum of 21 hours of coursework must be taken in the language of study (18 for double majors). No more than half the credit applied toward fulfillment of the degree requirements may be transferred from other universities. A student has 3 calendar years to complete the degree and must remain registered in (FR/SPAN 601 (Continuing Enrollment)) until the degree is completed.

Grades and Grade-point Average

Any graduate student whose grade point average falls below 3.0 will be placed on academic probation. Any graduate student on academic probation whose grade point average remains below 3.0 for two consecutive semesters in which she or he is enrolled, excluding summer sessions, will be permanently suspended from the Graduate School, unless the department and the collegiate dean petition the graduate dean for an exception.

French Courses offered:

FR 410 (3)	Advanced Language Study
FR 490 (3)	Advanced Independent Study
FR 501 (3)	Studies on a Selected Topic or Author
FR 540 (3)	Literature of the 18th Century
FR 550 (3)	Literature of the 19th Century
FR 560 (3)	Literature of the 20th Century
FR 570 (3)	The French and Their History
FR 576 (3)	Francophone Literature
FR 580 (3)	Masterpieces of French and Franco phone Literatures

Spanish Courses offered:

SPAN 414 (3)	Translation Techniques
SPAN 490 (3)	Advanced Independent Study

SPAN 501 (3)	Studies of a Selected Topic or Author
SPAN 511 (3)	Linguistic Structure of Spanish
SPAN 512 (3)	History of the Spanish Language
SPAN 520 (3)	Literature of the Middle Ages
SPAN 530 (3)	The Golden Age: Drama
SPAN 531 (3)	Cervantes
SPAN 532 (3)	The Golden Age: Prose and Poetry
SPAN 534 (3)	Colonial Literature
SPAN 550 (3)	Neoclassicism and Romanticism in Spain
SPAN 551 (3)	Spanish-American Literature of the 19th Century
SPAN 555 (3)	Spanish Realism and Naturalism
SPAN 560 (3)	Modern Spanish Literature and Culture (1898 to Spanish Civil War)
SPAN 561 (3)	Spanish-American Literature of the 20th Century
SPAN 565 (3)	Post-War and Contemporary Spanish Literature and Culture

400- Level Courses in Spanish that can count towards the MA

SPAN 410 (3)	Advanced Spanish Composition
SPAN 414 (3)	Translation Techniques
SPAN 420 (3)	Studies in the Literature of Middle Ages
SPAN 430 (3)	The Golden Age: Drama
SPAN 431 (3)	Cervantes
SPAN 432 (3)	The Golden Age: Prose and Poetry
SPAN 434 (3)	Colonial Literature
SPAN 450 (3)	Neoclassicism and Romanticism in Spain
SPAN 451 (3)	Studies in Latin-American Literature of the 20th Century
SPAN 475 (3-6)	Travel-Study in Latin America or Spain
SPAN 490 (1-3)	Advanced Independent Study

Foreign Language (FL) Courses

FL 436 (3)	Methods in Teaching World Languages
FL 437 (3)	Introduction to Computer-assisted Language Learning

Courses (FL)

436-3 Methods in Teaching World Languages. The course prepares future language teachers with the theoretical knowledge and the practical tools necessary to meet the demands of today's communicative language classroom. Based on insights from second language acquisition research and current trends and standards in the language teaching profession, students develop an informed and principled approach to teaching world languages effectively. Required of prospective language teachers in secondary schools. Prerequisite: concurrent or prior enrollment in 300-level course in French, German, Latin, or Spanish.

437-3 Introduction to Computer-Assisted Language Learning. (Same as LING 573) This hands-on course introduces essential concepts and skills for applying technology to language learning and instruction. Topics include online quizzes and activities, creating and editing multimedia objects for use in instructional materials, social networking, Web resources, evaluating

commercial materials, digital storytelling and hypermedia. New developments in CALL are introduced as the state of the art progresses. Can count towards the MA only with special approval by the Director of Graduate Studies.

491-1 to 4 Independent Study-ASL/Deaf Studies. Guided individual exploration of some area(s) of significance within the field of American Sign Language or Deafness. Students taking class for graduate credit will do critical study of one aspect. May be repeated as topic varies. Special approval needed from the instructor.

506-1 to 6 (1-3, 1-3) Research Problems—French. Individual research on a literary or linguistic problem involving original investigation in areas not covered by seminars or thesis.

507-1 to 6 (1-3, 1-3) Research Problems—German. Individual research on a literary or linguistic problem involving original investigation in areas not covered by seminars or thesis.

509-1 to 6 (1-3, 1-3) Research Problems—Spanish. Individual research on a literary or linguistic problem involving original investigation in areas not covered by seminars or thesis.

535-3 Critical Theory. Theories of literature and theories underlying literary criticism, taken logically rather than chronologically. Extensive reading, in the original language whenever possible, of both primary statements and exemplificative documents.

566-3 Bibliography and Research Techniques. Introduction to the use of the chief reference works in the humanities and social sciences as they pertain to foreign languages in general. Also, extensive work with bibliography and research methods in French, German, or Spanish.

580-3 Cross-Cultural Pragmatics. This course provides a comprehensive introduction to the study of pragmatics (i.e. language use in social context) in and across cultures. Students encounter pragmatics at work in the classic linguistic domains on and beyond the sentence level and will be exposed to the pragmatics of a wide range of world languages, including several Englishes, Spanish, French, German, Japanese, Finnish, Persian, Apache, and others. (Taught in English).

592-3 Advanced Computer-Assisted Language Learning. (Same as LING 592) This hands-on course builds on FL 437 (Introduction to Computer-Assisted Language Learning) and covers language learning in virtual worlds, creating a presence on the Web, course management systems, developing apps for mobile devices, making instructional videos as well as hypermedia learning units. New developments in CALL are introduced as the state of the art progresses. Prerequisite: FL 437 with a grade of C or better, or consent of instructor.

Chinese (CHIN)

No graduate program in Chinese is offered through the Eastern Languages and Civilization section. Four-hundred-level courses in this section may be taken for graduate credit unless otherwise indicated in the course description.

410-3 The Linguistic Structure of Chinese. Phonology and syntax of Mandarin Chinese. Principal phonological features of major Chinese dialects. Special emphasis on the contrastive analysis between Mandarin Chinese and English. Theoretical implications of Chinese syntax for current linguistic theories. This course satisfies the CoLA Writing Across the Curriculum

requirement. Prerequisite: one year of Chinese.

420-3 Chinese Literature. Reading and analysis of selected Chinese works, authors, or genres with a focus on modern Chinese literature. Taught in Chinese to enhance listening, speaking, reading, and writing at the advanced level and to develop the ability to analyze literature. Students taking this course for graduate credit will need to complete additional research papers. Prerequisite: CHIN 320B with a minimum grade of C or consent from the instructor.

435-3 Business Chinese. An overview of China's business through reading in Chinese dealing with the major aspects of China's foreign trade ranging from broad principles and policies to concrete details of operation and procedure. Enhancement of conversational skills for business contexts. This course satisfies the CoLA Writing-Across-the-Curriculum requirement. Prerequisite: 320 or equivalent.

470-3 Chinese Literature in Translation. Reading and analysis of selected Chinese works, authors, themes or genres in English translation with attention to literary genres and thought from ancient to contemporary times. Students taking this course for graduate credit will do a critical aspect. No knowledge of Chinese is required.

490-1 to 6 Advanced Independent Study in Chinese. Directed individual study of some question, author, or theme of significance in the field of Chinese literature, language or culture. Special approval needed from the instructor.

Classics (CLAS)

No graduate program is offered through the classics section. Four-hundred-level courses in this section may be taken for graduate credit unless otherwise indicated in the course description.

Courses numbered 488 are designed to help graduate students prepare for proficiency examination required by certain departments as evidence of competency in Latin. No prerequisite is stipulated. Students must register for these courses and are advised to take them as part of, not in addition to, their graduate program. Students will not receive graduate credit for courses numbered below 400.

415-3 to 9 (3 per topic) Advanced Reading in Greek. Reading and interpretation of Greek texts at an advanced level. Satisfies the CoLA Writing Across the Curriculum requirement. Prerequisite: three years of Greek or consent of the instructor.

416-3 to 9 (3 per topic) Advanced Reading in Latin. Reading and interpretation of Latin texts at an advanced level. Satisfies the CoLA Writing Across the Curriculum requirement. Prerequisite: three years of Latin or consent of instructor.

488-3 Latin as a Research Tool. Concentrated and individualized training in the recognition and interpretation of basic and complex grammatical structures and in the systematic acquisition of the principles of word formation for vocabulary expansion. Techniques for intensive and extensive readings and for translation of unedited texts in the student's own field of study. Intended for graduate students. Undergraduates who wish to enroll are encouraged to consult with course instructor. With consent of student's own department, and with a grade of B or A, satisfies graduate program requirements for foreign languages as research tool. Prerequisite: one year of Latin, or equivalent.

491-3 to 9 Classics Seminar. Intensive study of a select area of classis. Recent topics include Greek and Roman Religion, Socrates, and Homer. Capstone research course required for classics major and minors, though others are welcome. There are no formal prerequisites, but some knowledge of the ancient world will prove helpful (such as that provided by CLAS 230, 270, and 271). No knowledge of Latin or Greek required.

French (FR)

Courses numbered 488 are designed to help graduate students prepare for proficiency examination required by certain departments as evidence of competency in French. No prerequisite stipulated. Students must register for these courses and are advised to take them as part of, not in addition to, their graduate program. Students will not receive graduate credit for courses numbered below 400.

410-3 Selected Topics. Topics vary and are announced in advanced; both students and faculty suggest ideas. This course satisfies the CoLA Writing-Across-the-Curriculum requirement. A grade of C or better in FR 320A, or equivalent.

420-3 Introduction to French Literature and Cinema. This course will explore representative works in French from a variety of French and Francophone African authors and filmmakers. Students will be introduced to techniques of literary and filmic analysis through the reading of texts and the examination of films in French. FR 420 will be taught in French. Prerequisite: A grade of C or better in FR 320A or equivalent.

435-3 Living and Working in France. This course explores the French and Francophone business worlds from a variety of economic and cultural perspectives. Class work will focus on vocabulary, idioms, and expressions used in oral and written business communications. Readings on authentic cultural practices will provide real-world contexts for students preparing to live and work in a French-speaking country. Taught in French. Prerequisite: A grade of C or better in FR 320A or equivalent.

440-3 Literature of the Enlightenment. Study and discussion of the novel, theater, and philosophic writing of 18th century France as literature and as expressions of the Enlightenment. Major attention given to Montesquieu, Voltaire, Diderot, and Rousseau. Prerequisite: A grade of C or better in FR 320A or equivalent. Special approval needed from the instructor.

450-3 Literary Movements of the 19th Century. Romanticism, Realism, and Naturalism in poems, novels and theater plays followed by an examination of the reaction to these movements and of the influence of symbolism. Special approval needed from the instructor.

460-3 Studies in Literature of the 20th Century. Examination of the major themes, forms, techniques and style of novelists from Gide and Proust to Robbe-Grillet and dramatists from Giraudoux to Ionesco and Beckett. Prerequisite: A grade of C or better in FR 320A or equivalent. Special approval needed from the instructor.

470-3 The French and Their History. Study of major French historical events from Vercingetorix to the French Revolution. Examination of the political, philosophical, artistic movements and historic figures that shaped contemporary France. Taught in French. Prerequisite: A grade of C or better in FR 320A, or

equivalent.

475-3 to 6 Travel-Study in France. Travel-study project, planned under supervision of French faculty and carried out in France. Amount of credit depending on scope of study. Prerequisite: A grade of C or better in FR 320A, or equivalent.

476-3 Francophone Cultures and Literatures. Representative works and authors of the francophone world outside of France with special reference to African, Caribbean and Canadian literatures. Prerequisite: A grade of C or better in FR 320A, or equivalent.

480-3 Studies of Masterpieces of French and Francophone Literatures. Selected readings from French and Francophone authors. Introduction to main literary movements from the Middle Ages to the 20th century. Prerequisite: A grade of C or better in FR 320A, or equivalent.

488-3 French as a Research Tool. Concentrated and individualized training in the recognition and interpretation of basic and complex grammatical structures and in the systematic acquisition of the principles of word formation for vocabulary expansion. Techniques for intensive and extensive readings and for translation of unedited texts in the student's own field of study. Intended for graduate students. With consent of student's department, and with a grade of B or A, satisfies graduate program requirement for foreign language as research tool. Prerequisite: One year of French, (French 123B with a grade of C or better, one year of proficiency credit, or the equivalent).

490-3 Advanced Independent Study in French. Individual exploration of some question, author, or theme of significance within the field of French and Francophone literatures and cultures. Prerequisite: A grade of C or better in FR 320A, or equivalent.

501-2 to 6 Studies on a Selected Topic or Author. Intensive study of one author or topic.

515-3 Literary Stylistics. A study of the aesthetics and theory of French literary expression. Disciplined stylistic analyses of excerpts from representative works of great French authors. Appreciation of distinctive qualities of each writer's genius. Consideration is given to various stylistic methods. Prerequisite: FR 330 or permission of instructor.

520-3 Literature of the Middle Ages and Renaissance. A study of selected authors, literary movements, and expressions of the political realities and the philosophical currents of the Middle Ages and Renaissance.

525-3 Descriptive Stylistics. Consideration of levels of linguistic expression in contemporary French through the study of theoretical works and representative texts. Practice in composition and translation.

540-3 Literature of the 18th Century. Selected topics, movements, or authors in the literature of the 18th Century.

550-3 Literature of the 19th Century. Selected topics, movements, or authors in the literature of the 19th Century.

555-12 (3, 3, 3, 3) Advanced French and Francophone Literature and Cinema. Approaches to the study of film as literature. Through close readings of literary and cinematic texts, students will consider questions of period, genre, culture, and representation, and learn to "read" the two media in relationship. Readings in film theory, as well as works of French/Francophone tradition. **(a)** The 19th Century: Film in

the Age of the Novel. **(b)** The 20th Century: *Nouvelle vague to Nouveau roman...* and beyond. **(c)** Cinéma et littérature francophones: La Version antillaise. **(d)** Cinéma et littérature du Maghreb. Courses are conducted in French. Need not be taken in sequence.

560-3 Literature of the 20th Century. Study of an author, theme, movement, or critical literary issue of contemporary interest. Topics may range from the Existentialist vision or the Quest for Self to the novel of commitment of the New Novel.

570-3 The French and Their History. Study of major French historical events from Vercingetorix to the French Revolution. Examination of the political, philosophical, artistic movements and historic figures that shaped contemporary France. Taught in French. Recommended before FR 471/571. Prerequisite: FR 320B with passing grade or permission of instructor.

576-3 Francophone Literature. Representative readings of major Francophone writers from Europe, Canada, Africa and the Caribbean. Prerequisite: 330 or permission of instructor.

580-3 Masterpieces of French and Francophone Literatures. Appreciation and analysis of selected masterpieces in French and Francophone literatures with special attention given to required authors and works from the Master of Arts reading list.

599-1 to 6 Thesis.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded S/U or DEF only.

German (GER)

No graduate program is offered through the German section. Four-hundred-level courses in this section may be taken for graduate credit unless otherwise indicated in the course description.

410-3 German for Writing Proficiency. This course teaches the advanced grammar, vocabulary, and stylistic principles students need to write expository prose, critical essays, business and personal correspondence in German. Through readings and discussions in German, it also expands vocabulary and speaking ability. The final exam in the course can be counted for the German writing proficiency examination. This course satisfies the CoLA Writing Across the Curriculum requirement. Prerequisite: 320b with a grade of B or the equivalent.

411-3 Linguistic Structure of Modern German. The descriptive study of phonology, grammatical structure, and vocabulary of modern German with consideration of its structural differences from English and application to teaching. Conducted in English. Prerequisite: A grade of C or better in GER 320A, or equivalent.

413-3 Linguistic Variation and Cultural Diversity in the German-Speaking World. Gain intimate knowledge of the German-speaking world about linguistic and cultural variety and identity. Featured varieties include written and spoken German, standard vernacular, regional and urban dialects, youth and minority language, usage, and more. Varieties are explored in structural terms and examined in the social and

cultural contexts in which they occur. Course is conducted in German. Prerequisite: A grade of C or better in GER 320A, or equivalent.

435-3 Business German. An overview of German business, presented through lectures, readings and discussions. Coursework with textbook and supplementary materials will focus on the major aspects of German business. Exercises will include vocabulary building, listening and reading comprehension, oral and written summarization, role playing in typical situations, mock telephone conversations and business correspondence. Prerequisite: A grade of C or better in GER 320A, or equivalent.

460-3 German Theater: Literature on Stage. This course will explore developments in the German drama from the eighteenth century to the present, focusing on dramatic form and social, historical, and cultural contexts. Conducted in German. Prerequisite: A grade of C or better in GER 320A, or equivalent.

465-3 Self and Society: First-person Narrative. This course will introduce beginning students to German literature written in first person. It serves as an introduction to the way the personal voice is constructed in texts, and students will develop their understanding of the German narrative tradition. We will collectively probe our notions of realism, believability, and truth as we read stories of self-conscious narrators. Conducted in German. Prerequisite: A grade of C or better in GER 320A, or equivalent.

488-3 German as a Research Tool. Concentrated and individualized training in the recognition and interpretation of basic and complex grammatical structures and in the systematic acquisition of the principles of word formation for vocabulary expansion. Techniques for reading and for translation of unedited texts in the student's own field of study. Intended for graduate students. With consent of student's department, and with a grade of B or A, satisfies graduate program requirement for foreign language as a research tool.

490-1 to 6 (1 to 3, 1 to 3) Independent Study in German. Project-study under supervision of German faculty. Amount of credit depends on scope of study. May be repeated as the topic varies, up to the maximum of six semester hours. Restricted to senior or graduate standing. Special approval needed from the supervising instructor.

493-3 to 9 (3 per topic) Seminars in Special Topics in Literature and Language. Topics vary and are announced in advance; both students and faculty suggest ideas. May be repeated as the topic varies. Primarily for undergraduates. Special approval needed from the instructor. Prerequisite: A grade of C or better in GER 320A, or equivalent.

590-3 to 9 (3 per topic) Independent Study on Special Topics in Literature and Language. May be repeated only if the topic varies. Special approval needed from the department.

Japanese (JPN)

No graduate program in Japanese is offered through the Eastern Languages and Civilization section. Four-hundred-level courses in this section may be taken for graduate credit unless otherwise indicated in the course description.

410-3 The Linguistic Structure of Japanese. Inductive approach to the analysis of various aspects (such as phonology, morphology,

syntax) of Japanese grammar with emphasis on syntactic structures within any of the current theoretical frameworks such as pragmatics, functionalism and formal linguistics. May include contrastive analysis between Japanese and English, and close examination of theories of comparative-historical linguistics of Japanese and Korean. This course satisfies the CoLA Writing-Across-the-Curriculum requirement. Special approval needed from instructor.

435-3 Business Japanese. An introduction to the language and culture of the Japanese business world and to the structure of the Japanese business economy. The emphasis will be on learning appropriate levels of formality and politeness in oral communication and on achieving competency in the specialized language of business. This course satisfies the CoLA Writing-Across-the-Curriculum requirement. Prerequisite: 320A, B or equivalent.

490-1 to 6 Advanced Independent Study in Japanese. Directed individual study of some questions, author, or theme of significance in the field of Japanese literature, language or culture. Special approval needed from the instructor.

Spanish (SPAN)

401-3 to 12 Studies on a Selected Topic. Study of a topic in Spanish or Spanish American Literature, Culture, Film, or Linguistics. Prerequisites: SPAN 320A or consent of the instructor.

410-3 Advanced Spanish Composition. This course teaches the advanced grammar, vocabulary, and stylistic principles students need to write expository prose, critical essays, and personal correspondence in Spanish. This course satisfies the CoLA Writing-Across-the Curriculum requirement. Prerequisite: A grade of C or better in SPAN 320B, or equivalent. Can count towards the MA only with special approval by the Director of Graduate Studies.

414-3 Translation Techniques. A practical introduction to the field of professional translation, from and into Spanish. Prerequisite: 320b or equivalent.

420-3 Studies in Literature of the Middle Ages. Studies of the origins of Spanish literature emphasizing works such as the *Cantar de Mio Cid*, *Libro de buen amor*, and *La Celestina*. Prerequisite: 320B or equivalent.

430-3 The Golden Age: Drama. Plays of Lope de Vega, Calderon, Tirso de Molina, and others. Prerequisite: 320 B, or equivalent.

431-3 Cervantes. Study of Miquel de Cervantes' masterpiece *Don Quixote* and of other Cervantine works. Prerequisite: 320B or equivalent.

432-3 The Golden Age: Prose and Poetry. The most representative prose and poetry written during the 16th and 17th centuries in Spain. Prerequisite: 320B or equivalent.

434-3 Colonial Literature. Study of the literature of Spanish America before 1825. Prerequisite: 320B, or equivalent.

435-3 Business Spanish. Discussion and practice of the vocabulary, styles, and forms used in Spanish business correspondence, as well as report writing and documents dealing with trade, transportation, payment, banking and advertising. Does not count toward the MA in Foreign Languages. Prerequisite: 320B or equivalent.

450-3 Neoclassicism and Romanticism. 18th and 19th Century Spanish Literature-Neo-classicism and Romanticism.

Prerequisite: A grade of C or better in SPAN 320B, or equivalent.

451-3 Studies in Latin American Literature of the 19th Century. Modernism, Romanticism, Realism, and Naturalism in Spanish America. Prerequisite: A grade of C or better in SPAN 320B, or equivalent.

455-3 Spanish Realism and Naturalism. 18th and 19th Century Spanish Literature Realism and Naturalism. Eighteenth and nineteenth century Spanish literature. Prerequisite: A grade of C or better in SPAN 320B, or equivalent.

460-3 Modern Spanish Literature and Culture (1898-Civil War). The Generations of '98 and '27. Prerequisite: A grade of C or better in SPAN 320B, or equivalent.

461-3 Studies in Spanish American Literature of the 20th Century. The main currents and outstanding works in the literature of Spanish America since 1900. Prerequisite: 310 or consent of instructor.

465-3 Post-war and Contemporary Spanish Literature and Culture. Prerequisite: A grade of C or better in SPAN 320A, or equivalent.

475-3 to 6 Travel-Study in Latin America or Spain. Travel-study course or project planned under supervision of Spanish faculty and carried out in a Spanish-speaking country. Prerequisite: SPAN 320A with grade of C or better.

488-3 Spanish as a Research Tool. Concentrated and individualized training in the recognition and interpretation of basic and complex grammatical structures and in the systematic acquisition of the principles of word formation for vocabulary expansion. Techniques for intensive and extensive readings and for translation of unedited texts in the student's own field of study. Intended for graduate students. With consent of student's department, and with a grade of B or A, satisfies graduate program requirement for foreign language as a research tool. Prerequisite: one year of Spanish or equivalent.

490-1 to 3 Advanced Independent Study. Individual exploration of some topic in Hispanic literature, language, or culture. Special approval needed from the instructor.

501-3 to 6 (3,3) Studies of a Selected Topic or Author. Intensive study of an author or topic in Spanish Literature or Spanish American Literature as announced in advance.

511-3 Linguistic Structure of Spanish. Theory and practice in Spanish pronunciation and study of Spanish grammatical structure, in contrast to English, with application to teaching.

512-3 History of the Spanish Language. Survey of the internal and external history, from Vulgar Latin to Modern Spanish.

520-3 Literature of the Middle Ages. Studies in epic and didactic literature, and lyric poetry, from the origins of Spanish literature to the fifteenth century. Representative works such as the *Cantar de Mio Cid*, *Libro de buen amor*, *Romancero viejo* and *La Celestina* will be studied.

530-3 The Golden Age: Drama. Study and discussion of plays by Lope de Vega, Tirso de Molina, Calderón, and other Golden Age playwrights.

531-3 Cervantes. Study of Miquel de Cervantes' masterpiece "Don Quixote" and of other Cervantine works.

532-3 The Golden Age: Prose and Poetry. Appreciation and analysis of the poetry of Garcilaso de la Vega, Fray Luis de León, Góngora, Quevedo, and of narrative forms such as picaresque fiction, pastoral fiction, and Moorish fiction.

534-3 Colonial Literature. Study of the literature of Latin

America before 1825. Prerequisite: A grade of C or better in SPAN 320B, or equivalent.

550-3 Neo-classicism and Romanticism in Spain. Study of important neoclassical and romantic literary works and the socio-historical context in which they were produced.

551-3 Spanish-American Literature of the 19th Century. Intensive study of a literary movement, trend, genre, or author of the period, as specified by the topic to be announced for each semester.

555-3 Spanish Realism and Naturalism. Study of important realist and naturalist literary works and the socio-historical context in which they were produced.

560-3 Modern Spanish Literature and Culture (1898 to the Spanish Civil War). The study of important literary, philosophical, and artist works of the early 20th-century and the socio-historical context in which they were produced.

561-3 Spanish-American Literature of the 20th Century. Intensive study of a literary movement, trend, genre, or author of the period, as specified by the topic to be announced for each semester.

565-3 Post-war and Contemporary Spanish Literature and Culture. The Study of important literary, philosophical, and artistic works of the post-war period and beyond, and of the socio-historical context in which they were produced.

570-3 Culture and Civilization. The cultural patterns and heritage of the Hispanic people from earliest times to the present.

571-3 Contemporary France. Survey of major historical events of 19th and 20th century France. Examination of contemporary French society focusing on topics such as politics, economy, education, arts and popular culture. Taught in French. Prerequisite FR 320B with passing grade or permission of instructor.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded S/U or DEF only.

Legal Studies

<http://www.law.siu.edu/>

SCHOOL OF LAW

Graduate Faculty:

Anderson, Cheryl, Professor, J.D., University of North Dakota School of Law; LL.M., Temple University School of Law, 1988; 1995; 1998.

Behan, Chris, Associate Professor and *Associate Dean*, J.D., Brigham Young University J. Reuben Clark Law School; LL.M., United States Army Judge Advocate's General School, 1995; 2003; 2006.

Brittingham, Mark A., Clinical Assistant Professor, J.D., Southern Illinois University School of Law, 1982; 2007.

Brobst, Jennifer A., Assistant Professor and *Director for Center Health Law and Policy*, J.D., University of San Diego School of Law; LL.M., Victoria University of Wellington Law School, New Zealand, 1996; 2002; 2014.

Buys, Cindy, Professor and *Director of International Law Programs*, J.D., Syracuse University College of Law; LL.M., Georgetown University Law Center, 1991; 1999; 2001.

Camero, Jennifer, Assistant Professor, J.D., Northwestern University School of Law, 2004; 2012.

Dawson, Edward C., Assistant Professor, J.D., University of Texas School of Law, 2001; 2014.

Dervan, Lucian, Assistant Professor, J.D., Emory University School of Law, 2002; 2009.

Drennan, William, Associate Professor, J.D., Saint Louis University School of Law LL.M., LL.M., Washington University, 1985; 1997, 2003; 2005.

Erbes, John, Assistant Professor and *Director of Clinical and Experiential Education*, J.D., Southern Illinois University School of Law, 1979; 1996.

Fontaine, Cynthia, Professor and *Dean*, J.D., University of Southern California Gould School of Law, 1988; 2010.

Holte, Ryan T., Assistant Professor, J.D., University of California Davis School of Law, 2008; 2013.

Johnson, Twinette, Assistant Professor of Law and *Director of Academic Support*, J.D., Tulane University Law School, 1999; 2011.

Jones, Alicia, Assistant Professor and Reference Librarian, J.D., Howard University School of Law; M.L.I.S., University of Illinois at Urbana-Champaign, 1995, 2010; 2013.

Koehler, Mike, Assistant Professor, J.D., University of Wisconsin School of Law, 2000; 2012.

Liemer, Sue, Professor and *Director of Lawyering Skills*, J.D., University of Virginia School of Law, 1986; 2000.

Lind, Douglas, Professor and *Director of the Law Library*, J.D., Valparaiso University School of Law, M.I.L.S., The University of Michigan, 1992; 1994; 2007.

Macias, Seven J., Assistant Professor, J.D., University of California Berkeley School of Law; M.A., University of California Berkeley; LL.M., University College London, 2002, 2003, 2005; 2012.

Marlow, Melissa, Clinical Professor, J.D., Southern Illinois University School of Law, 1996; 1998.

McCubbin, Patricia, Professor, J.D., University of Virginia

School of Law, 1990; 2000.

Mocsary, George A., Assistant Professor, M.B.A., University of Rochester, Simon Graduate School of Business; J.D., Fordham University School of Law, 1997, 2009; 2013.

Munson, Valerie, Assistant Professor, J.D., Rutgers University School of Law, 1982; 2010.

Noble-Allgire, Alice, Professor, J.D., Southern Illinois University School of Law, 1990; 1993.

O'Neill, Rebecca J., Clinical Professor, J.D., Southern Illinois University School of Law, 1998; 1991.

Pardieck, Andrew, Assistant Professor, J.D., Indiana University Maurer School of Law; Ph.D. (S.J.D. equivalent), Hokkaido University School of Law (Japan), 1996, 2000; 2012.

Schroeder, William, Professor, J.D., University of Illinois, College of Law; LL.M., Harvard Law School, 1969; 1977; 1984.

Schultz, Mark F., Associate Professor, J.D., George Washington University, The National Law Center 1993; 2003.

Strohmeyer, Nancy, Assistant Professor and Head of Public Services, J.D., Southern Illinois University School of Law, 1985; 2012.

Thomas, Gail, Clinical Assistant Professor, J.D., Southern Illinois University School of Law, 1996; 2004.

Upchurch, Angela, Associate Professor, J.D., Loyola University Chicago School of Law, 2001; 2014.

Wells, Joanna, Clinical Assistant Professor, J.D., Southern Illinois University School of Law, 1998; 2011.

Wright, Nolan, Assistant Professor and Reference Librarian, J.D., M.L.I.S., University of Washington, 1995, 2008; 2009.

Master of Legal Studies

The Master of Legal Studies (M.L.S.) is a post-baccalaureate degree program designed for those who wish an advanced knowledge of the law and the legal system but who do not wish to become lawyers. The M.L.S. course of study is designed to provide non-lawyer professionals with the skills and knowledge necessary to identify, understand, and respond to commonly encountered legal issues. The M.L.S. program is offered as a general (tailored) degree in legal studies or with a concentration in health law and policy. Those pursuing the tailored course of study, however, will be encouraged to design a program within the curricular offerings of the law school which meets their more specific needs.

M.L.S. General (Tailored)

This tailored M.L.S. program is directed at serving those who are professionals in fields where there is significant legal regulation and need an introduction into basic legal principles, but who do not aspire to become lawyers themselves. This program is particularly relevant to those who deal with a complex array of state and federal legal requirements in performing their daily tasks. As the complexity of the modern workplace intensifies, due largely to increasing regulatory requirements, the demand for individuals with a knowledge of and a comfort level with the law will increase. The general M.L.S. program will help satisfy this demand.

M.L.S. in Health Law and Policy

The M.L.S. with a concentration in health law and policy is designed for those who are working (or desire to work) in health care fields and who need an introduction to the basic

legal principles that are important to the health care field, but who do not wish to become lawyers themselves. In particular, physicians, hospital administrators, risk management specialists, human resources professionals, employees of insurance companies, and other health care professionals who, on a regular basis, deal with legal issues ranging from state and federal regulation of the delivery of health care services to the privacy of health-related patient information. In addition, non-lawyer government workers who are employed by agencies that regulate health-care providers also would benefit from an exposure to these basic legal principles and their application to the health care field.

Curriculum and Requirements

Coursework. To earn the M.L.S. degree students are required to complete 30 credit hours. The curriculum is designed to introduce students to legal study through two courses, Introduction to American Law and Legal System, and Legal Writing and Research for Non-Lawyers. In addition to these two required courses (three credit hours each), students will complete the remainder of their course work by taking regular law school classes. Those opting for the health law and policy concentration complete essentially the same curriculum as other M.L.S. students, but are required to complete a minimum of 12 hours in health care-related courses.

Research. Candidates must also write a thesis that demonstrates the ability to research and write at an acceptable graduate level. The thesis will be written under the supervision of a faculty sponsor approved for such purpose by the Director of Graduate Legal Studies. A candidate will earn three credit hours for successful completion of the thesis. The thesis requirement may be satisfied by successful completion of a course that satisfies the law school's senior writing requirement.

Time Limitation. Students must complete all requirements for the M.L.S. program within four years of first matriculation.

Admission Criteria and Procedure

Admission to the M.L.S. program requires positive action by the Graduate Admissions Committee. Admission is based on demonstration of academic and professional achievement and academic and professional promise. Those whose first language is other than English must also demonstrate proficiency in English. In order to matriculate, students must also be admitted to the SIU Graduate School. This program requires a nonrefundable \$65.00 application fee that must be submitted with the Application for Admission. Applicants must pay this fee by credit card.

Additional application information is available from:

Director of Graduate Legal Studies

School of Law

Lesar Law Building

1150 Douglas Drive

Carbondale, Illinois 62901-6804

or at:

<http://www.law.siu.edu/>

498-3 Introduction to American Law and Legal System. This course is designed as an introduction to the law and the legal system of the United States for students enrolled in the Master of Legal Studies (M.L.S.) program, and for students enrolled in the LL.M. program who received their legal training in a non-common law country. The course introduces the basic organization of the legal system, basic legal concepts, the common law and the case method of studying the common law, statutory law, and legal synthesis. Special approval needed from the Director of Graduate Legal Studies.

499A-3 Legal Research & Writing for Non-Lawyers I. LAW 499A is an introduction to legal research and writing specifically designed for MLS students and for LL.M. students who are foreign trained in the law. Successful completion of the course is a required part of the MLS curriculum. Students learn how to critically read legal materials, how to summarize their findings (brief cases), become familiar with basic legal resources, how to conduct basic legal research, and how to write memoranda, etc., which rely on legal materials.

499B-3 Legal Research & Writing for Non-Lawyers II. LAW 499B is a continuation of LAW 499A and is highly recommended for MLS students. Students learn more advanced research and writing skills. These skills are designed to allow the non-lawyer professional to conduct policy and legal research in a non-legal environment using relatively low cost resources. Regulatory and administrative materials are a focus of enhanced skill development in legal research. Additionally, students are introduced to basic written advocacy and policy.

611-1 Continuing Enrollment – Master of Legal Studies. For those graduate students who have not finished the M.L.S. degree program and who are in the process of working on completing their requirements. The student must have completed a minimum of required work before being eligible to register for this course. Restricted to admission to M.L.S. Program. Special approval needed from the Director of Graduate Legal Studies.

For a complete list of law courses:

<http://law.siu.edu/>

Courses (LAW)

Linguistics

www.linguistics.siu.edu/
ling@siu.edu

COLLEGE OF LIBERAL ARTS

Graduate Faculty:

Angelis, Paul, Associate Professor, *Emeritus*, Ph.D., Georgetown University, 1968; 1981.

Baertsch, Karen S., Associate Professor, Ph.D., Indiana University, 2002. Phonology, phonetics, historical linguistics, dialects, Central Asian languages.

Brutten, Sheila, Associate Professor, *Emeritus*, M.A., Southern Illinois University Carbondale, 1965; 1968.

Carstens, Vicki M., Professor, Ph.D., UCLA, 1991. Theoretical syntax and morphology, African linguistics, field linguistics.

Charkova, Krassimira, Senior Lecturer, Ph.D., Southern Illinois University, 2001. Theory and methods in TESOL, teacher training, research methods in TESOL and linguistics, second language acquisition.

Crow, Bryan Kelso, Associate Professor, Ph.D., University of Iowa, 1982. Interpersonal communication, conversation analysis, gender and communication, Irish studies.

Dotson, John E., Professor, *Emeritus*, Ph.D., Johns Hopkins University, 1969.

Friedenberg, Joan, Professor *Emeritus*, Ph.D., University of Illinois at Urbana-Champaign, 1979; 1994.

Fuller, Janet, Professor, Ph.D., University of South Carolina, 1997; 1997. Language contact and bilingualism, discourse analysis, sociolinguistics, linguistic anthropology, language, gender and sexuality, pragmatics.

Gilbert, Glenn G., Professor, *Emeritus*, Ph.D., Harvard University, 1963; 1970.

Halliday, Laura J., Senior Lecturer, Ph.D., Southern Illinois University, 2005. TESOL theory and methods, ESL writing, pedagogical grammar.

Kim, Alan Hyun Oak, Associate Professor, Ph.D., University of Southern California, 1985; 1988. Syntactic theory, functional syntax, semantics, comparative linguistics, Japanese and Korean syntax.

Lakshmanan, Usha, Professor, Ph.D., University of Michigan, 1989; 1990. First and second language acquisition, psycholinguistics, syntactic theory, Tamil syntax.

Martin, Katherine I., Assistant Professor, Ph.D., University of Pittsburgh, 2015. Second language acquisition, reading and literacy, vocabulary learning, morphological awareness, cross-linguistic transfer, English as a Second Language.

Montavon, Mary V., Lecturer, *Emeritus*, Ph.D., University of Illinois, 2003.

Parish, Charles, Professor, *Emeritus*, Ph.D., University of New Mexico, 1959; 1965.

Perkins, Kyle, Professor, *Emeritus*, Ph.D., University of Michigan, 1976; 1976.

Punske, Jeffrey, Assistant Professor, Ph.D., University of Arizona, 2012. Theoretical syntax, morphology, and semantics.

The Department of Linguistics offers programs leading to the Master of Arts degree in applied linguistics and the Master of Arts degree in Teaching English to Speakers of Other

Languages (TESOL).

Overview of Graduate Programs

The M.A. program in applied linguistics is designed to give students a broad training in most aspects of contemporary linguistics, including phonology, syntax, phonetics, semantics, historical linguistics, psycholinguistics, language acquisition, sociolinguistics, and field methods. In addition, students will pursue advanced study through further coursework and thesis research. Graduates of the applied linguistics program frequently go on to more advanced study and research in linguistics leading to the Ph.D. degree.

The M.A. program in TESOL is designed primarily for students who wish to pursue careers in the teaching of English to speakers of other languages either in the United States or abroad. The program combines both theory and practice. In addition to core courses in linguistics, students in the TESOL program are required to take courses in the theory and methods of language teaching and to teach in a supervised practicum in the teaching of oral and written English. Graduates of the TESOL program can go on to advanced study of language learning and teaching or related fields.

For students who are interested in language study but are not committed to either graduate major, the department offers a number of interesting, non-specialist courses which may serve as electives in degree programs such as those offered by the Departments of Anthropology, Communication Disorders and Sciences, English, Languages, Cultures, and International Trade, Psychology, Communication Studies, and the College of Education and Human Services. A sequence of courses is also available for students wishing to pursue a double major combining applied linguistics or TESOL with other programs at the master's level.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Linguistics. Applicants must pay this fee by credit card. Applicants for admission should address inquiries to the Chair, Department of Linguistics, Southern Illinois University Carbondale, Carbondale, IL 62901-4517, USA.

Admission to the Degree Programs

Undergraduate GPA. Applicants for admission to either degree program, in addition to meeting the requirements for admission to the Graduate School, are expected to have undergraduate grade point averages of at least 3.0 ($A = 4.0$). Applicants with GPAs below 3.0 may be granted conditional admission. However, students admitted on a conditional basis must earn a graduate GPA of 3.0 after the first 10 hours of letter-graded course work; failure to do so will result in the student being dropped from the program.

Foreign Language Requirement. All students who are native speakers of English must have completed at least one semester of study of a foreign language within the preceding five years (excluding high school) and have achieved a grade of *B* or better. Those students who have achieved proficiency in a foreign language by means other than graded academic study must demonstrate that they have achieved a minimum level of novice-mid as defined in the proficiency guidelines published by the American Council on the Teaching of Foreign Languages.

Students may also fulfill this requirement by taking one semester of a foreign language with a grade of *B* or better while they are enrolled in their M.A. program. In recognition of their experience in learning English, international students who have learned English as a second or foreign language are exempt from this requirement.

TOEFL and GRE. International student applicants who are not native speakers of English must achieve a score on the Test of English as a Foreign Language (TOEFL) of at least 577 (paper) or 90 (ibt), or 7.0 on the IELTS. Although submission of scores on the Graduate Record Examination (GRE) is not required for admission to the Graduate School nor to the department, applicants are advised that high GRE scores put them at a competitive advantage when applying for university fellowships or departmental assistantships.

Academic Retention

Academic Probation. As required by the Graduate School, any student whose GPA falls below 3.0 will be placed on academic probation. Any student who fails to return to good standing after one term on academic probation will not be eligible to hold a graduate assistantship. Any student who fails to return to good standing after two terms on academic probation will be dropped from the program. Any student who accumulates three or more incompletes will be put on academic probation and may return to good standing by reducing the number of incompletes to two or fewer.

Minimum Grades in Core Courses. As described below, both M.A. programs include a number of core courses which are required of all students. These courses must be passed with a grade of *B* or better. Students who receive a grade lower than *B* on a core course must take the course again. They will register officially for the course and will be granted a letter of permission to do so from the department. Both grades will be counted in calculating GPA. Students who need to repeat core courses may take other courses concurrently or sequentially for which the core courses are prerequisites.

Grade Point Average to Graduate. All graduate work must be completed with an overall GPA of 3.0.

Master of Arts Degree in Applied Linguistics

The Master of Arts in Applied Linguistics requires 36 hours of coursework including a mix of required courses and restricted and non-restricted electives in all the major linguistic subfields. There are two options for completing the MA: a thesis option and a non-thesis option. Thesis writers are required to do advanced coursework in phonology or syntax and 3-6 hours of thesis writing; non-thesis writers have a little more flexibility in their advanced coursework and take more courses at that level in lieu of thesis writing credits.

Required Core Courses: all candidates (9 semester hours)

All students must take the 3 courses in Set A:

Set A

- 505-3 The Professional Study of Linguistics
- 503-3 Phonological Theories
- 508-3 Syntactic Theory

Restricted Electives: all candidates (9 semester hours)

All students must take at least 2 of the courses in Set B for breadth of study.

Set B

- 415-3 Sociolinguistics
- 445-3 Psycholinguistics
- 402-3 Phonetics
- 500-3 Formal Semantics

All students must also take at least 1 writing-intensive course from Set C.

Set C

- 552-3 Field Methods in Linguistics
- 506-3 Historical Linguistics

Requirements specific to the two options (6 semester hours)

Additional coursework requirements diverge depending on whether students choose the thesis or non-thesis option for the MA.

The thesis option

Those students who wish to write theses must formally apply to the department Graduate Studies Committee by the beginning of the third semester. They must also take at least one of the advanced courses in Set D:

Set D

- 553-3 Advanced Phonology
- 558-3 Advanced Syntax

Thesis-writing students will also enroll in a minimum of 3 and a maximum of 6 hours of thesis writing.

- 599-3 to 6 Thesis writing course

The thesis is a written summary of a student's independent research conducted while enrolled in one of the department's M.A. programs. Every thesis is expected to include a clear statement of the topic, identification of the particular issues to be investigated, a literature review, an explanation of the procedures followed, and an analysis and discussion of research findings. Each student writing a thesis must have a thesis committee composed of at least three faculty members, one of whom serves as chair of the committee and must be from the Department of Linguistics. The thesis must be submitted to a public oral examination by the student's committee. Detailed information regarding the thesis may be found in *Thesis Policies and Guidelines*, copies of which are available from the department.

The non-thesis option

Students who do not write theses must take 2 additional courses from Set C and/or Set D.

Unrestrictive electives

To complete the 36 hours required for the MA in Applied Linguistics, students may choose electives from among courses offered within the department or relevant courses taught by faculty in the Departments of Anthropology, Communication Disorders and Sciences, Computer Science, English, Foreign

Languages and Literatures, Philosophy, Psychology, Communication Studies, and the College of Education and Human Services (subject to departmental approval). Where appropriate, students are encouraged to take courses in quantitative and ethnographic research methods taught in the Departments of Counseling, Quantitative Methods, Special Education, and Anthropology. Students are also encouraged to attend the annual summer institutes sponsored by the Linguistic Society of America and TESOL. Credit will be allowed for course work successfully completed in this way.

Master of Arts Degree in Teaching English to Speakers of Other Languages

The M.A. degree in TESOL blends linguistic science with the art of classroom practice. It prepares students both intellectually and experientially so that as teachers they are capable of making wise and informed choices among different language teaching approaches, methods, and techniques. In addition, students will understand how differences among individual students, teaching and learning situations, and social structures influence decisions they will be called upon to make as teachers. The TESOL master's program provides a firm and broad foundation in current theories of language and language learning and graduates will be prepared to take on professional careers as teacher educators and curriculum specialists as well as classroom teachers.

There are two options for completing the MA TESOL degree, a thesis option and a non-thesis option. In both cases 33 credits are required. Both options include three components: a group of core courses totaling 18 semester hours, elective courses totaling 9 semester credit hours, and a concentration—either a thesis (thesis option) or additional course work from a selected group of focus courses (non-thesis option) which provides the final 6 semester hours.

Core Courses (18 semester hours)

All students in the MA TESOL program take the following six courses:

LING 472-3	Assessment of ESC and Bilingual Students
LING 505-3	The Professional Study of Linguistics
LING 531-3	Pedagogical Grammar
LING 541-3	Second Language Acquisition
LING 570-3	Methods and Materials in TESOL
LING 583-3	TESOL Practicum

Elective courses (9 semester hours)

Students can select from a number of elective courses offered each semester. In some cases, courses offered by other departments may be used to complete elective requirements. Faculty advisors work with students to determine which electives will be most appropriate for the student's program. Students are also encouraged to attend summer institutes when offered by the TESOL organization or the Linguistic Society of America. Credit will be allowed for coursework successfully completed in this way.

Thesis (6 semester hours)

Students following the thesis option are required to submit a thesis, which is a written summary of their independent research. The thesis is expected to include a clear statement of the topic, identification of the particular issues to be

investigated, a literature review, an explanation of the procedures followed, and an analysis and discussion of the research findings. Each student writing a thesis must have a thesis committee composed of at least three faculty members, one of whom serves as Chair of the committee and must be from the Department of Linguistics. The thesis must be submitted to a public oral examination by the student's committee. The six credit hours used for the thesis work may be taken in one semester or divided across more than one semester but should coincide with the terms in which the student is actually working on the thesis project. Detailed information regarding the thesis may be found in *Thesis Policies and Guidelines*, copies of which are available from the department.

Focus Courses (6 semester hours)

Students following the non-thesis option are required to take two additional courses beyond those included in the core and elective categories. These courses serve as ones in which students can apply what they have been learning to designated topics, issues, and problems related to the teaching of English to speakers of other languages. These courses are writing intensive, which is to say that they require students to demonstrate their understanding through written assignments; they generally require a final written project. The two courses selected by the student as focus courses must be from the following group of courses:

LING 470-3	Theoretical Foundations of Teaching ESL and Bilingual Students
LING 543-3	Bilingualism
LING 573-3	Introduction into Computer-Assisted Language Learning
LING 582-3	Course Design for TESOL
LING 584-3	Teaching Composition in a Second Language
LING 586-3	English for Specific Purposes
LING 587-3	Teaching Reading in a Second Language
LING 589-3	Teaching Vocabulary in a Second Language

Emphasis in CALL

In addition to a Linguistics degree program, students may opt to take courses for an "Emphasis in CALL" (Computer-Assisted Language Learning). The two courses required for this emphasis are:

LING 573
LING 592

Both courses are taught on campus and online.

Courses (LING)

The Department of Linguistics offers courses toward the Master of Arts degree in applied linguistics and the Master of Arts degree in teaching of English to speakers of other languages (TESOL).

402-3 Phonetics. Theory and practice of articulatory phonetics.

403-3 English Phonology. Study of English phonology, including phonetics, phonemics and prosodics. Prerequisite: LING 300 or Graduate status or consent of department.

404-3 American Dialects. Regional variation and social stratification of American English. Phonological and syntactic differences among the major dialects of American English. Prerequisite: LING 300 or Graduate status or consent of department.³

415-3 Sociolinguistics. (Same as Anthropology 415) History, methodology and future prospects in the study of social dialectology, linguistic geography, multilingualism, languages in contact, pidgin and creole languages, and language planning. Prerequisite: LING 300 or Graduate status or consent of instructor.

416-3 Spanish in the U.S.A. (Same as ANTH 416) This course offers a survey of the historical, social, political, linguistic and educational issues surrounding the Spanish language in the United States. Topics to be addressed include Spanish language use and bilingualism, language maintenance and shift, education of Latino populations, Hispanic diversity, and Latino literature.

426-3 Gender, Culture, and Language. (Same as WGSS 426 and ANTH 426) This course is designed for students who have had some exposure to gender studies. It will focus on readings in language and gender in the fields of anthropological- and socio-linguistics. Issues to be addressed are the differences between language use by men/boys and women/girls, how these differences are embedded in other cultural practices, and the various methodologies and theories that have been used to study gendered language use.

430-3 to 6 (3,3) Grammatical Structures. Detailed analysis of the structure of particular languages. May be repeated to a total of six hours credit with consent of department. Prerequisite: LING 300 or Graduate status or consent of department.

442-3 Language Planning. Survey of the field of language planning: definitions and typologies, language problems, language treatment, attitudes and beliefs about language, relations between language planning processes and other kinds of social and economic planning, linguistic innovations and other processes of language change, implementation of language policies. Prerequisite: LING 300 or Graduate status or consent of department.

445-3 Psycholinguistics. (Same as Psychology 445) A broad spectrum introduction to psycholinguistics. Topics to be covered include general methodology for the study of psycholinguistics, the nature of language, theories of human communication, language comprehension and production, first and second language acquisition, meaning and thought, natural animal communication systems, and language and the brain. Prerequisite: LING 300 or Graduate status or consent of instructor.

450-3 to 6 (3,3) Language Families. A synchronic survey of particular language families or sub-families. May be repeated to a total of six hours credit with consent of department. Prerequisite: LING 300 or Graduate status or consent of instructor.

470-3 Theoretical Foundations of Teaching ESL and Bilingual Students. Provides a broad overview of the field of bilingual education, including related terminology; historical, political, social, theoretical, international, economic, cultural, and legal aspects of bilingual education; and educational program models for serving LEP students.

471-3 Bilingual Education Methods and Materials. Methods and materials for: bilingual content, biliteracy, sheltered and multicultural instruction and for ELLs with disabilities; techniques for advocacy for ELLs, writing funding proposals, and conducting program reviews and workshops. Includes

materials, reviews, lesson planning and micro-teaching.

472-3 Assessment of ESL and Bilingual Students. Assessment concepts and terminology; how to select, administer, and interpret standardized tests for English learners; develop traditional and alternative classroom tests of language and content instruction. Course includes lectures, readings, class discussions, and individual and group projects.

480-3 to 12 Less Commonly Taught Languages. Elementary course in less commonly taught language. Languages vary. Section (a) corresponds to first semester, section (b) of the same language is a continuation of section (a). Must be taken in (a), (b) sequence when available. Sequence may be repeated with a different language. Students must earn a grade of C or better in LING 480A before beginning LING 480B.

500-3 Formal Semantics. This course will introduce and develop formal mechanisms to encode meaning in natural language. We will deeply explore the topics of predication, definiteness, quantification, and semantic modeling. Mastery of these topics can be applied to many other semantic phenomena. By the end students will be able to:

- Understand and evaluate scholarly literature in semantics
- Approach problems in natural language from the perspective of a formal semanticist
- Understand and describe the role of semantics in generative approaches to language
- Produce novel work in semantics

501-3 Approaches to Error Analysis. Theory and methodology of contrastive analysis and error analysis. Application of both methodologies to comparison of English syntactic and phonological structures with those of other languages. Prerequisite: LING 503 and either LING 508 or LING 531, or consent of instructor.

503-3 Phonological Theories. An examination of the development of phonological theories from the 19th century up to the present. Relationships among various theories and insights into language structures that arise from them are considered. Data analysis within the perspectives of the different theories. Prerequisite: LING 505 or consent of department.

505-3 The Professional Study of Linguistics. Basic concepts and methods of general linguistics. Fundamentals of the nature, structure and functioning of language. Data analysis and problem solving. Introduction to professional standards and resources available for linguistic research. Course satisfies introduction to linguistics requirement.

506-3 Historical Linguistics. Theories and methods in the study of the history and prehistory of languages and language families. Prerequisite: LING 505, LING 503, and LING 508 or consent of department.

508-3 Syntactic Theory. An examination of the major concepts and issues in generative grammar. Data from diverse languages will be examined. Students will be presented with problems in syntax to solve. They will also carry out an individual project in syntactic analysis. Prerequisite: LING 505 or consent of department.

510-3 History of Linguistics. The history of linguistic inquiry from classical times to the present. Prerequisite: one previous course in linguistics or consent of instructor.

531-3 Pedagogical Grammar. Explores the relationships among language structure, learning and teaching in order to

understand the role of grammar in TESOL. Makes students more aware of the way the English language works, the kinds of language that ESL learners produce and why they proceed through certain stages, and understand the role and effects of grammatical consciousness-raising on the development of English as a second language. Prerequisite: LING 570 or consent of department.

540-3 to 6 (3 per topic) Studies in Applied Linguistics. Selected topics in applied linguistics. May be repeated as topics vary to a total of six hours of credit with consent of department. Prerequisite: LING 505 or consent of department.

541-3 Introduction to Second Language Acquisition. (Same as PSYC 577) Introduction to key concepts and major theoretical and methodological issues in second language acquisition. Major developments in SLA in phonology, morphology, lexis, syntax, semantics and discourse and provides students with hands-on experience in describing and accounting for second language data. Opportunity to design and implement a data-based SLA study in an area of interest to students. Prerequisite: LING 505 or consent of instructor.

542-3 Advanced Seminar in Second Language Acquisition. Research seminar in second language acquisition on selected topics such as universal grammar in SLA, language transfer, variation in SLA, second language learnability, etc. Prerequisite: 541 or consent of instructor.

543-3 Bilingualism. (Same as PSYC 578) A comprehensive introduction to the study of bilingualism. Course will examine the linguistic, psycholinguistic, sociolinguistic and educational aspects of bilingualism, particularly as pertaining to the care and education of bilingual children. Prerequisite: LING 505 or consent of instructor.

544-3 Discourse Analysis. (Same as ANTH 544) Survey of major approaches to the analysis of spoken or written discourse including speech act theory, pragmatics, interactional sociolinguistics, ethnography of communication, conversation analysis, variation analysis, and critical discourse analysis. Prerequisite: LING 505 or consent of department.

545-3 Language, Gender, and Sexuality: Anthropological Approaches. (Same as ANTH 546, WGSS 546) This course examines the study of language in society with a particular focus on how linguistic practices are part of the construction of gender and sexuality identities, ideologies, social categories, and discourses. Anthropological theories applied to the study of language, gender and sexuality will be covered along with a variety of methodological approaches.

546-3 Conversation Analysis: Pragmatics. (Same as CMST 546) Study of the pragmatics of everyday conversation: sequential organization, topical coherence, speech act rules and functions, contextual frames and background understandings. Emphasis on observational research methods and analysis of original data. Special approval needed from the instructor.

547-3 Conversation Analysis: Ethnomethodology. (Same as CMST 547) Descriptive study of sequential organization of interaction. Students read research literature and learn methods for transcription and analysis in the conversation analytic tradition. Topics include openings and closings, adjacency pair organization, turn taking, overlap, assessments, presequences, repair, topic, nonvocal activities, response, laughter, storytelling, argument, play and institutional

contexts. Special approval needed from the instructor.

549-3 Research Methods in Linguistics and TESOL. This course examines basic concepts and principles of quantitative and qualitative methods in Linguistics and TESOL. It prepares students to critically read and understand related research as well as design and carry out their own research projects. It includes analyses of research articles, writing literature reviews, making informed decisions about appropriate methodology and data analyses procedures. Prerequisite: LING 505 or consent of department.

550-3 to 6 Seminar in Theoretical Linguistics. Guided advanced research in (a) syntax and semantics, (b) phonology, (c) sociolinguistics, (d) selected topics. Sections (a) through (c) may be taken only once each. Section (d) may be repeated as topics vary. Special approval needed from the department.

551-3 Pragmatics. (Same as ANTH 551) An investigation of language use in context; this incorporates both social and psychological aspects of language use. Topics to be covered in this course include speech acts; implicature; conversation analysis; and the acquisition of communicative competence by both first and second language learners. Prerequisite: LING 505 or consent of department.

552-3 Field Methods in Linguistics. At a time when minority languages are dwindling and becoming extinct, language documentation is more important than ever. This course has two pedagogical goals, related to the documentation of understudied languages. The first goal is to train students on the methods of eliciting and evaluating data to construct a detailed linguistic description and analysis of an unknown language, essentially from scratch, by working with a native speaker of the language. The second goal is for students to discover specific details of the structure of the language under investigation and document them for posterity.

553-3 Advanced Phonology. Emphasis is on current work in phonology, its impact on phonological theory, and application of theory to data, and implications for current work. Prerequisite: LING 503 or consent of department.

558-3 Advanced Syntax. This course focuses on the study of current trends in generative grammar, building on Government and Binding and moving into Minimalism. Part of the class will be devoted to the study of original works on special topics. A major requirement of this class is a term project investigating the syntax of a language of the student's choosing. Prerequisite: LING 508 or consent of department.

570-3 Methods and Materials in TESOL. Requirement for Illinois ESL/Bilingual Approval. Methods/materials to teach ESL/EFL in the United States (K-adult) and abroad. Promotes eclecticism through reflective practice; overview of methods from early grammar translation to cognitive and communicative, integrated skills, technology and content-based approaches. Lecture, readings, discussion, demonstration, materials review, lesson planning, micro-teaching.

573-3 Introduction to Computer-Assisted Language Learning. (Same as FL 437) This hands-on course introduces essential concepts and skills for applying technology to language learning and instruction. Topics include online quizzes and activities, creating and editing multimedia objects for use in instructional materials, social networking, Web resources, evaluating commercial materials, digital storytelling and hypermedia.

New developments in CALL are introduced as the state of the art progresses.

574-3 CESL Teaching Methods. Introduces new CESL teaching assistants to teaching methodologies and principles within the CESL context, following CESL's curriculum and classroom practices. Familiarizes students with pedagogical strategies, theories of language instruction, materials design, curriculum development, error correction and assessment, classroom management, reflective teaching, and professionalism. Required of first time CESL teaching assistants.

575-3 Language Testing. Discussion of different second language (L2) testing purposes, characteristics of good L2 tests, process of L2 test development, evaluation and revision of L2 tests, interpretation and reporting of L2 test results, current trends in L2 testing. Prerequisite: LING 570 or consent of the instructor.

580-3 to 6 Seminar in Special Topics in TESOL. Selected topics in special areas of teaching English to speakers of other languages. (a) Administration of intensive English programs, (b) Teaching English abroad, (c) Selected topics. Sections (a) and (b) may be taken only once each. Section (c) may be repeated as topics vary. Prerequisite: LING 570 or consent of instructor.

582-3 Course Design for TESOL. A review of issues and procedures in the design and implementation of courses for teaching English to speakers of other languages. Particular attention is given to recent developments such as content-based instruction. All major course components such as setting of objectives, syllabus design, content specification and evaluation are considered. In addition, resources available for addressing these issues will be discussed. Prerequisite: 570 or consent of instructor.

583-3 TESOL Practicum. Class observation and supervised teaching of English to speakers of other languages; meets concurrently with Linguistics 454: Observation and Practice in TESOL and Linguistics 100: Instruction in ESL. Prerequisite: LING 570 or consent of department.

584-3 Teaching Composition in a Second Language. Analysis of current theories of composition in a second language, research on the nature, process, and applications of research for the teaching of writing in a second language. Prerequisite: LING 570 or consent of instructor.

586-3 English for Specific Purposes. A course designed to familiarize students with key components of English language courses designed for speakers of other languages with specific needs or in well-defined settings. Case studies and sample courses are reviewed and students develop individual projects related to a content area or course component of their choice, e.g., needs assessment, syllabus design, materials development or teacher training. Prerequisite: LING 570 or consent of instructor.

587-3 Teaching Reading in a Second Language. Analysis of theories of reading in a second language (L2) and research into the nature of L2 reading. Observation and practice in developing L2 reading materials and teaching techniques under supervision. Prerequisite: LING 570 or consent of instructor.

588-3 Intercultural Communication. Advances knowledge and understanding of theory, practice, and research in intercultural communication, including the effects of cultural identities and cross-cultural experiences on language, perception and world

view. Implications for language learning and teaching are also explored. Prerequisite: LING 505 or consent of department.

589-3 Teaching Vocabulary in a Second Language. The course integrates theory and practice in teaching second language vocabulary. It offers an introduction to concordances and collocations and their use in materials development. Prerequisite: LING 570 or consent of instructor.

592-3 Advanced Computer-Assisted Language Learning. (Same as FL 592) This hands-on course builds on LING 573 (Introduction to Computer-Assisted Language Learning) and covers language learning in virtual worlds, creating a presence on the Web, course management systems, developing apps for mobile devices, making instructional videos as well as hypermedia learning units. New developments in CALL are introduced as the state of the art progresses. Prerequisite: LING 573 with a grade of C or better, or consent of instructor.

593-1 to 4 Research in Linguistics. Individual research under graduate faculty guidance. Special approval needed from the instructor.

597-1 to 8 Readings in Linguistics. Individual readings in linguistics under graduate faculty guidance. Special approval needed from the department.

599-1 to 6 Thesis. Minimum of three hours to be counted toward a Master's degree. Special approval needed from the department.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded S/U or DEF only.

Management

(See Business Administration)

Marketing

(See Business Administration)

Mass Communication and Media Arts

mcma.siu.edu/academics/graduate/

COLLEGE OF MASS COMMUNICATION AND MEDIA ARTS

The graduate faculty, consisting of members of the School of Journalism and the departments of Cinema and Photography, and Radio, Television, and Digital Media, offers graduate work leading to the following degrees: Master of Arts in Media Theory and Research, Master of Science in Professional Media and Media Management, Master of Fine Arts, and the Doctor of Philosophy in Mass Communication and Media Arts.

Graduate Faculty in Cinema and Photography (CP):

Aguayo, Angela, Associate Professor, Ph.D., University of Texas, Austin, 2005; 2008. Documentary theory and social change, critical/cultural studies, video production.

Boruszkowski, Lilly A., Associate Professor, *Emerita*, M.F.A., Northwestern University, 1979; 1982.

Bursell, Cade, Associate Professor, M.F.A., San Francisco State University, 2002; 2003. Cinema Production queer cinema, experimental cinema.

Chase, Jennida, Assistant Professor, M.F.A., Virginia Commonwealth University, 2009. Film and video production and theory, public art.

Cocking, Loren D., Assistant Professor, *Emeritus*, M.A., Ohio State University, 1969; 1976.

Covell, Michael D., Assistant Professor, *Emeritus*, M.F.A., Ohio University, 1975.

Gilmore, David A., Associate Professor *Emeritus*, M.F.A., Ohio University, 1969; 1969.

Kapur, Jyotsna, Professor and *Chair*, Ph.D., Northwestern University, 1998; 1998. Feminist and Marxist analysis of media, globalization, children's film and consumer culture, documentary and ethnographic film, the German and Japanese new wave and Indian cinema.

Kolb, Gary P., Professor, *Emeritus*, M.F.A., Ohio University, 1977; 1979.

Leigh, Michele, Assistant Professor, Ph.D., University of Southern California, 2008; 2007. Silent cinema, Russian and east European cinema, female industrial practice, animation, film history and theory, independent cinema, film festivals.

Logan, Fern, Associate Professor, *Emerita*, M.F.A., School of the Art Institute of Chicago, 1993; 1995.

Martinez, Antonio, Associate Professor, M.F.A., East Carolina University, 2005; 2006. Digital imaging, alternative printing processes, multimedia installation, class and racial identity.

Metz, Walter, Professor, Ph.D. University of Texas, Austin, 1996; 2009. Contemporary film and television criticism and theory, literature and film, science and film, post-war American culture.

Overturf, Daniel, Professor, M.F.A., Southern Illinois University Carbondale, 1983; 1991. Photography.

Roddy, Jan Peterson, Associate Professor, *Emerita*, M.F.A., University of Illinois, 1987; 1988.

Rowley, R. William, Associate Professor, M.F.A., University

of Iowa, 1974; 2000. Foundational digital and analog film production and post-production techniques, experimental filmmaking, observational documentary, intermedial arts.

Spahr, Robert, Associate Professor, M.F.A., Parsons School of Design, New York City, 1991; 2009. Computational art using generative and procedural art processes, genetic algorithms, time-based media and live art.

Swedlund, Charles A., Professor, *Emeritus*, M.S., Illinois Institute of Technology, 1961; 1971.

Tudor, Deborah, Associate Professor, *Associate Dean*, and *Interim Associate Dean of Graduate Studies*; Ph.D., Northwestern University, 1992; 2006. Culture and technology, globalization, neoliberalism, and cinema.

Vratil, Dru E., Associate Professor, M.F.A., University of Iowa, 1998; 2001. Screenwriting.

Zhou, Hong, Associate Professor, M.F.A., York University, Toronto Canada, 2000; 2008. Film and video production, cinematography, Chinese cinema, surrealist cinema.

Graduate Faculty in Journalism (JRNL):

Atwood, L. Erwin, Professor, *Emeritus*, Ph.D., University of Iowa, 1965; 1967.

Babcock, William A., Professor, Ph.D., Southern Illinois University Carbondale, 1979; 2008. Media ethics, public policy reporting.

Dolan, Mark, Associate Professor, M.A., Syracuse University, 1995; 2008. Visual and interactive communication, photojournalism.

Freivogel, William H., Professor, J.D., Washington University Law School, 2001; 2006. Journalism, media law, public affairs and policy.

Frith, Katherine, Professor, Ed.D., University of Massachusetts, 1985; 2008. International advertising, copywriting, advertising and society.

Han, Dong, Assistant Professor, Ph.D., University of Illinois, 2011; 2012. Intellectual property and media, medical history and political economy, international communication and communication technology.

Jaehnig, Walter B., Associate Professor, *Emeritus*, Ph.D., University of Essex, England, 1974; 1987.

Karan, Kavita, Professor, Ph.D., University of London, 1994; 2009. Political communication, advertising and market research, international communication, media and children, health communication.

Lowry, Dennis T., Professor, *Emeritus*, Ph.D., University of Iowa, 1972; 1990.

Onyebadi, Uche, Associate Professor and Director, Ph.D., University of Missouri, 2008; 2008. Political communication, news editorial.

Shidler, Jon A., Associate Professor, *Emeritus*, M.S., Roosevelt University, 1980; 1990.

Spellman, Robert, Associate Professor, *Emeritus*, J.D., Cleveland State University, 1977; 1985.

Stone, Gerald C., Professor, *Emeritus*, Ph.D., Syracuse University, 1975; 1991.

Veensta, Aaron, Associate Professor, Ph.D., University of Wisconsin-Madison, 2009; 2009. New media and political communication, political blogs, cognitive effects of new

construction.

Xie, Wenjing, Associate Professor, Ph.D., University of Maryland, 2009; 2009. New media and online journalism, communication and technology, mass communication, international communication.

Graduate Faculty in Radio, Television, and Digital Media (RTD):

Brooten, Lisa B., Associate Professor, Ph.D. Ohio University, 2003; 2002. Media and globalization, gender, alternative media, social movements, political communication, interpretive/critical research methods, ethnography.

Burns, David, Associate Professor, M.F.A., Parsons School of Design, 2001; 2005. 3D computer animation; media arts theory; technology, culture, and society; memory and post-memory.

Downing, John, Professor, *Emeritus*, Ph.D., London School of Economics, 1974; 2004.

Gher, Leo A., Associate Professor, *Emeritus*, M.S., Southern Illinois University Carbondale, 1980; 1983.

Hochheimer, John, Professor, Ph.D., Stanford University, 1986; 2006. Community radio, global media, media studies pedagogy, media history, spirituality and education, and poplar music.

Ji, Sung Wook, Assistant Professor, Ph.D., Indiana University, 2012. Media economics, media and telecommunication policy, political economy of media.

Johnson, Phylis W., Professor, Ph.D. Southern Illinois University Carbondale, 2003; 1990. Sound and radio culture, virtual worlds, gender and diversity, media literacy, acoustic ecology, instructional design and technology.

Keller, Kenneth R., Associate Professor, *Emeritus*, M.A., University of Illinois, 1966; 1984.

Kreider, Wago, Associate Professor, M.F.A., Rutgers University, 2002; 2006. Independent filmmaking, broadcast television production; media studies.

Lawrence, William Novotny, Associate Professor and *Chair*, Ph.D. University of Kansas, 2004; 2005. African American representation in film and television, Japanese animation, Hindi cinema, film history, genre theory.

Lemish, Dafna, Professor and *Dean*, Ph.D., Ohio State University, 1982; 2011. Children and media; gender representations and identity construction; media literacy; qualitative methodologies.

Lewison, Sarah, Associate Professor, M.F.A., University of California, San Diego, 2001; 2007. Video art, social movements, environmental media, installation, live art and performance.

Meehan, Eileen R., Professor, Ph.D., University of Illinois, Champaign-Urbana, 1983; 2007. Political economy of the media. cultural studies, mass communications history, critical communications research.

Motyl, Howard D., Associate Professor, M.F.A., Northwestern University, 1990; 2007. Media production and screen writing, narrative, gay representation.

Needham, Jay, Associate Professor, MFA, California Institute of the Arts, 1989; 2003. Video, film, digital audio production, and electro-acoustic music.

Padovani, Cinzia, Associate Professor, Ph.D. University of Colorado, 1999; 2005. Historical approaches to political economy,

public service broad-casting, international communication, social movements and the media.

Perkins-Buzo, Reid, Assistant Professor, M.F.A., Northwestern University, 2004. Computer animation, game development, and trans media art.

Podber, Jacob J., Associate Professor, Ph.D., Ohio University, 2001; 2002. Media studies, oral history, cultural studies, Appalachian studies, media history.

Shipley, Charles W., Professor, *Emeritus*, Ph.D., Florida State University, 1971; 1971.

Thompson, Jan, Professor, M.G.S., Roosevelt University, 1988; 2000. Video production, documentary, sports production.

To support the graduate programs, the College of Mass Communication and Media Arts houses high-end multimedia computer labs and state-of-the-art design, video, audio, animation, and editing software. The college has a wide variety of cinema, photography, print media, radio-television and video production facilities. Students have access to the mainframe computer and the Internet.

For all MCMA graduate programs, applicants must hold a bachelor's degree from an accredited institution or have completed all undergraduate degree requirements prior to the beginning of the classes for the term for which admission is sought. Applicants may begin the admissions process when they need no more than 32 semester hours beyond the credit shown on their transcript at the time of application to complete all requirements for the bachelor's degree.

Applications. All requirements for admission to the Graduate School at Southern Illinois University Carbondale must be met.

Applicants must submit completed application forms, transcripts of all undergraduate work, and a personal statement describing their objectives for study in the program to which they are applying, career goals and interests.

Applicants must arrange for three references to send letters of recommendation to the Associate Dean of Graduate Studies.

Students should contact the Associate Dean of Graduate Studies, College of Mass Communication and Media Arts, mail code 6606, Southern Illinois University Carbondale, Carbondale, IL 62901 to apply or to make other inquiries. This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Mass Communication and Media Arts (MA, MS, MFA, Ph.D.). Applicants must pay this fee by credit card.

Retention. In addition to the retention policies of the SIU Graduate School, each master's degree student must maintain an overall grade point average of 3.0 ($A = 4$) and each Ph.D. student must maintain an overall grade point average of 3.25 ($A = 4$). Upon falling below this average, students will be allowed only one academic term (other than summer) to bring their average up to the minimum; failing this, they will be dropped from the program and will not be allowed to re-apply.

All MCMA graduate students will undergo an end-of-the-year faculty review of their progress toward their degree that includes course progress and/or creative or scholarly work. After the review, students will be notified of any deficiencies to be resolved, students failing to rectify those deficiencies by the end of the next semester (excluding summer) will be permanently

suspended from the MCMA graduate program.

All MCMA graduate students who have completed their course work and the minimum number of credits required for projects, thesis or dissertation must enroll in MCMA 601, Continuing Research Enrollment, each semester until the completion of their degree programs. Exceptions to the continuing enrollment rule are allowed only for students who are required to be away from SIU full-time by the United States or the State of Illinois government.

Master of Arts Degree

Media Theory and Research.

This degree offers a broad overview of mass communication and media arts and their processes and effects in the larger social system. Graduates gain both an appreciation of the field's strengths and an understanding of its obstacles in being a force for social development. Areas in which this specialty is used include department-level leadership in the mass media industries, opinion research, commentary, critical theory, content analysis, and teaching. The degree may lead to doctoral studies.

Admission. Students whose preparation is lacking in certain areas may be required to take undergraduate courses that will not be counted towards the M.A. degree.

International Students must have a TOEFL of at least 600 (paper score), 250 (computer score), or 100 (internet score). All applicants must take the Graduate Record Examination (GRE). Generally applicants must have a grade point average of at least 3.0 ($A = 4$) for their last two years of undergraduate work. Other factors will also be considered including professional and academic accomplishments, examples of professional work, awards and honors, graduate examination scores or evidence of scholarship such as research papers.

Retention. No course in which the grade is below *C* shall count toward the degree or fulfillment of any requirement, but the grade will be included in the grade point average. No more than 3 hours of *C* work in graduate courses will count toward the degree. The College of Mass Communication and Media Arts allows a maximum of three years from date of enrolling in the master's degree to completion of degree.

Curriculum. Candidates must complete a minimum of 33 credits including a minimum of 15 credits of core requirements, 12 credits in an emphasis area, and a 3-credit thesis.

Core

- MCMA 500-3 Mass Media as Social Institutions
- MCMA 504-3 Foundations of Mass Communication Theory
- MCMA 592-3 Master's Seminar

Two of the following in consultation with a faculty adviser:

- MCMA 531-3 Critical Research Methods in Media Arts
- MCMA 532-3 Quantitative Research Methods
- MCMA 534-3 Qualitative Research Methods

Emphasis Area

A minimum of four courses (12 credits) selected in consultation

with the student's faculty adviser to include at least 1 course from outside of the college and 1 course from within. Possible emphasis areas include, but are not limited to: advertising/strategic communication, communication for social change, film and criticism, international communication, law and policy, media economics, media effects, media history, media technologies, new media, political communication, and social issues.

Thesis

MCMA 599-3 Thesis

M.A./M.B.A. Concurrent Degree Program

Separately, the M.B.A. in the College of Business requires completion of 33 semester hours of coursework; the MCMA M.S. in Professional Media and Media Management requires 30 semester hours of coursework. The concurrent degree program entails completion of 21 semester hours of MCMA-approved courses and 24 credit hours of COB-approved courses, for a total of 45 hours. This is a savings of 18 semester hours over pursuing both degrees separately as COB accepts 9 semester hours of MCMA-approved coursework and MCMA accepts 9 hours of COB-approved coursework. Students wishing to be admitted to the concurrent program must apply and be accepted to the MCMA M.S., as well as, apply and be accepted into the MBA program in the College of Business. This initiates the process to pursue the concurrent degrees.

Applicants for the concurrent degree program must also earn a satisfactory score on the GMAT or GRE to be admitted to the MBA program, as well as successfully complete the College of Business Foundation Workshops offered during the summer semester break, if they have not previously completed the 10 foundation business courses (or their equivalent) required for admission into the MBA program.

Graduate Certificate in Civil Society, Communication, and Media Practices

A new era of collective activism has expanded and reinvigorated the role of communication and media practices in shaping the space for and nature of public engagement. In this process, Civil Society Organizations (CSOs), Non-Profits (NPOs), Non-Governmental Organizations (NGOs), local organizations, grassroots movements and media makers have entered public culture with renewed creativity, force, and necessity. This certificate offers students a critical, historical, and theoretical understanding of the significance of communication and media within the broader context of contemporary practices engaged in organizing public and social change. Students will learn to analyze these media practices in their various forms and contexts, from the local to the global, and the complex relationships they navigate with political and social movements, governments, and more mainstream forms, such as entertainment. Our curriculum emphasizes theory and practice and introduces students to a variety of media practices, including research methodologies based in the media arts. The certificate prepares graduates for leading, evaluating, and collaborating in communication efforts aimed at social change. Graduate students will have a broad understanding of the civic potential of media and be prepared to communicate with, promote, and participate in grassroots communities in the age

of social media.

Admission.

All requirements for admission to the Graduate School at Southern Illinois University Carbondale must be met. Applicants must submit the Application for Admission to Graduate Study forms and certified transcripts of all post-secondary studies. Applicants must also submit a resume outlining educational and professional experience, as well as a personal statement describing their objectives for study in the program, career goals and interests. Generally, applicants must have a grade point average of at least 3.0 (4.0+A) for their last two years of undergraduate work. International students whose native first language is not English, or those with fewer than 100 graded semester hours of college credit at a U.S. college or university, must take the TOEFL and score at least 600 (paper score), 250 (computer score), or 100 (internet score) to be admitted.

Curriculum.

The minimum 18 credit hour certificate program requires that the student successfully complete the 6 courses listed below.

MCMA 555-3	Communication and Media Management of Civil Society Organizations
MCMA 568-3	Social Media, Theory & Practice
MCMA 561-3	Communication for Social Change
MCMA 543-3	New Media Practice for Civil Society Organizations
MCMA 537-3	Introduction to Applied Communication Research
MCMA 569-3	Alternative Media: Power & Resistance

Master of Science Degree

The M.S. in Professional Media and Media Management Studies provides students with a practical background in applied research and critique of the communications industries and trains students with varied professional interests to establish careers in communications industries. More specifically, this program aims to train intelligent, self-aware, flexible graduates who will go on to become leaders in the communications industries. The core curriculum is designed to expose students to a broad foundation in media studies. In consultation with their faculty advisor, students also select an emphasis area in which in-depth exploration of one facet of professional media management, studies, practice or technology is explored. Students finish their program of study with a Research Report, which may be accompanied by a project, on a topic of their choosing from within their emphasis area. The College of Mass Communication and Media Arts allows a maximum of three years from date of enrolling in the M.S. program for completion of the M.S. degree.

Program Admission. All requirements for admission to the Graduate School at Southern Illinois University Carbondale must be met. Applicants must submit the Application for Admission to Graduate Study forms, certified transcripts of all post-secondary studies, as well as three letters of recommendation from individuals who can evaluate potential for graduate studies. Applicants must also submit a resume outlining educational and professional experience, as well as a personal statement describing their objectives for study in the program, career goals and interests. Applicants should include

an example of work that demonstrates their competency, preferably professional work, although prior academic work is acceptable. Work samples might be in the form of print articles, video or audio tapes, DVDs, URLs or CDs. Applicants must clearly indicate their role(s) in any project submitted. Generally, applicants must have a grade point average of at least 3.0 (4.0 = A) for their last two years of undergraduate work. International students whose native or first language is not English, or those with fewer than 100 graded semester hours of college credit at a U.S. college or university, must take the TOEFL and score at least 600 (paper score), 250 (computer score), or 100 (internet score) to be admitted. Students whose preparation is deemed lacking in certain areas may be required to take undergraduate courses to attain competency. These will not be counted toward the M.S. degree

Curriculum. Candidates must complete a minimum of 30 credits including 6 hours of core requirements, 21 credits in an emphasis area and a 3-credit Research Report.

Core (6 Credits)

MCMA 500-3	Mass Media as Social Institutions
MCMA 592-3	Master's Seminar

Emphasis Area (21 Credits)

A minimum of seven courses selected in consultation with the faculty adviser. No more than 6 credits can be at the 400 level. Topics of study include media management, strategic advertising communication, digital documentary production, public policy reporting, and new media production.

Research Report (3 credits)

MCMA 589-3	Report/Project
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Master of Fine Arts Degree

The Master of Fine Arts degree provides substantial advanced study for a small number of highly talented individuals. The program emphasizes the artistic development of the individual student and the creation of quality artistic works in photography, film, video, sound, new media, and interdisciplinary media. Degree requirements are 60 semester hours, including 51 hours at the 500-level. The program generally takes three years to complete.

While mastery of craft within Media Arts is a vital component of the M.F.A., the philosophy is that graduate study should expand the student's breadth as an artist and encourage interdisciplinary study. Available course work in production, criticism, theory, history, and combined media studies emphasizes the interwoven character of traditional and contemporary approaches and technologies in the 21st century.

Additional course work can be pursued through the School of Art and Design, the School of Music, and the Departments of Theater, English, Anthropology, Communication Studies, etc. A distinguished faculty of artists and scholars, excellent facilities, and a variety of curricular offerings allow students to individually tailor their programs of study.

Admission. All requirements for admission to the Graduate School at Southern Illinois University Carbondale must be met. Applicants must submit the Application for Admission to Graduate Study forms, certified transcripts of all post-

secondary studies as well as three letters of recommendation from individuals who can evaluate their potential for graduate studies. Applicants must also submit a resume outlining educational and professional experience, as well as a personal statement describing their objectives for study in the program, career goals and interests.

Prospective students must present evidence of exceptional talent and/or potential in one or two media pursuits in the degree program. Applicants should include an example of work that demonstrates their competency. This evidence will ordinarily consist of a portfolio of photographs or digitally generated art works, one or more films, videos, sound works, multimedia productions, web art projects, or other evidence of artistic potential. Applicants must clearly indicate their role(s) in any project submitted. An interview with faculty in the program is highly recommended, particularly for applicants with minimal course work in the field.

Acceptance into the program and continuing enrollment are at the discretion of the College of Mass Communication and Media Arts and the Graduate School. Generally, applicants must have a grade point average of at least 3.0 (4.0 = A) for their last two years of undergraduate work. International students whose native or first language is not English, or those with fewer than 100 graded semester hours of college credit at a U.S. college or university, must take the TOEFL and score at least 600 (paper score), 250 (computer score) or 100 (internet score) to be admitted. Students whose preparation is deemed lacking in certain areas may be required to take undergraduate courses to attain competency. These will not be counted toward the M.F.A. degree.

Retention. At the end of the first year in residence, each M.F.A. student will undergo a review by a committee of faculty. Possible outcomes of this review are Pass, Provisional Pass, and Fail. Failure of this review will result in termination from the program. Students who receive a Provisional Pass in this review will receive a letter outlining the areas in which they must improve and be assigned a faculty mentor for this process. Failure to demonstrate improvement will result in termination from the program.

Procedures. By the end of the third semester in residence, each M.F.A. student will be required to select, in consultation with the Associate Dean of Graduate Studies, a committee chair and a committee of two additional graduate faculty members. The faculty committee and the student develop a specific plan of study, considering the requirements of the Graduate School, the degree program, and the goals of the student.

The M.F.A. degree culminates in an intensive Creative Thesis that must be publicly presented. The exact nature of the project and presentation will be determined in consultation between the student and the committee. The committee chair supervises the thesis. An oral examination by the faculty committee will take place in conjunction with the public presentation of the thesis and will focus on an evaluation of the project. The M.F.A. electronic thesis document consists of a formal paper describing the Creative Thesis, its historical precedents, contemporary context, and theoretical underpinnings with embedded media files that document the public exhibition/screening. It must be filed with the SIU Graduate School. The University reserves the

right to retain a portfolio or samples of each student's work.

Curriculum. The minimum 60 credit degree requires 27 credits of common requirements constituting a core, 27 credits of electives, and a 6 credit thesis.

Core (27 credits)

- MCMA 557- 6 MFA Studio Arts Practice(3,3)
- MCMA 558-9 MFA Studio Critique (3, 3, 3,)
- MCMA 550-3 History of Media Arts and Culture
- MCMA 551-3 Theory of Media Arts
- MCMA 531-3 Critical Research Methods in Media Arts and Culture

And

- MCMA 552-3 Seminar: Topics in the History and Theory of Media Arts

Or

- MCMA 555-3 Topical Seminars

Thesis (6 credits)

- MCMA 599-6 Thesis (3,3 OR 6)

Electives (27 credits)

Select 27 credits from either inside or outside of the college. No more than 6 credits can be taken at the 400-level and no more than 15 hours of MFA Projects (3,3,3,3,3) can be taken. MFA Projects cannot be repeated with the same professor.

Doctor of Philosophy Degree

The Ph.D. degree program engages students in an interdisciplinary study of global media communication. Concepts and methods drawn from various research traditions in the field are compared and contrasted, while specialization in particular areas and approaches is open to students.

Admission. Students applying for doctoral study must have a master's degree and a graduate GPA of at least 3.00. International students must have a TOEFL score of at least 600 (paper score), 250 (computer score), or 100 (internet score). All applicants must submit currently valid Graduate Record Examination (GRE) scores. Other factors will also be considered including professional and academic accomplishments, examples of professional work, awards and honors, evidence of scholarship such as research papers and published articles, and prior full-time teaching in the mass communication and media arts area. A visit to SIU and interview with faculty is recommended.

Students whose preparation is lacking in certain areas may be required to take undergraduate courses that will not be counted towards the Ph.D. degree.

An accelerated entry option to the Ph.D. program is offered in exceptional cases to students who have been admitted to the M.A. program. To be eligible, the student must: 1) possess a master's degree; 2) have qualified for admission to the MCMA Ph.D. program initially; 3) complete at least nine hours but no more than 18 hours in the M.A. degree; 4) have a minimum 3.25 GPA in the M.A. program with no incomplete or deferred grades. The student may petition the associate dean of Graduate Studies for the accelerated entry option during the semester in which the student will begin taking the 9th hour of graduate courses, but must petition before earning the 18th hour of course work in the M.A. program. If approved, the student

is enrolled in the Ph.D. program the next semester. Up to 18 graduate credits earned in the M.A. program will count toward the Ph.D. degree if the accelerated entry option is approved by the MCMA Graduate Committee. Once the student is admitted to the Ph.D. program, all requirements of the Ph.D. program apply. Exceptions to any of these rules must be appealed to the MCMA Graduate Committee, which has final authority to approve or reject the petition.

Retention. No course in which the grade is below *C* shall count toward the degree nor fulfillment of any requirement, but the grade will be included in the grade point average. No more than 3 hours of *C* work in graduate courses will count toward the degree.

Procedures. Detailed policies for the Ph.D. degree are available from the MCMA Graduate Office, including such topics as graduate symposium, first year review, composition of graduate committees, comprehensive exam procedures, etc. However, some of the major steps through the program are:

1. During the third semester of enrollment, each Ph.D. student will prepare a total program plan for the degree and secure sponsorship by a faculty member who may become the dissertation committee chair. The plan should include a list of courses and tools, with some explanation and justification for their selection in relation to academic goals. The plan will be discussed and modified, when appropriate, before approval.
2. When the student has completed all course work (with all incomplete and deferred grades removed) other than the classes taken in the concurrent semester, the student must pass rigorous comprehensive written and oral examinations. The examination must be completed during the fall semester of the third year in the program. Failure to successfully complete the exams by the end of the fall semester of the third year will result in dismissal from the program.
3. Upon successfully completing the comprehensive written and oral exams, the student advances to candidacy to complete and defend a dissertation based on scholarly research and independent thought that adds to the body of knowledge in the field.
4. Under the guidance of a dissertation committee chair, the student forms a dissertation committee and prepares a dissertation proposal consisting of the introduction, literature review, and methodology for the investigation proposed. An oral defense of proposal must be made before the committee and interested observers and approved within one year of reaching candidacy.
5. The dissertation defense will be before members of the dissertation committee and interested observers. Although others than committee members may be allowed to ask questions, the pass or fail decision on the oral defense will be made by committee members only. The College of Mass Communication and Media Arts allows a maximum of seven years from date of enrolling for completion of the doctoral degree.

Curriculum. The Ph.D. in mass communication and media arts requires a minimum of 60 credits including 12 credits of

foundation courses, 9 credits of research tools courses, 15 credits of electives, and a 24-credit dissertation. A minimum of 12 courses are required. Ten courses must be taken within MCMA.

All course work counting towards the degree must be at the 500 level. If the faculty advisor and student determines a 400 level course would be beneficial, the course can be taken as an independent study with specific extra work to make it equivalent to a 500 level course. A plan of study must be submitted and approved for such a course.

A maximum of two (2) independent study courses, for 6 credit hours total, can be counted toward degree (MCMA 596 and/or 591).

Foundation (12 credits)

- | | |
|------------|---|
| MCMA 504-3 | Foundations of Mass Communication Theory |
| MCMA 505-3 | Theoretical Issues in Mass Communication |
| MCMA 508-3 | Conceptual Foundations of Research Strategy |
| MCMA 595-3 | PhD Proseminar |

Research Tools Courses (9 credits)

Nine credit hours of additional research tools courses must be taken, selected in consultation with the student's faculty advisor. A minimum of two (2) must be within MCMA.

Electives (15 credits)

Fifteen credit hours of additional courses must be taken, selected in consultation with the student's faculty advisor to build an emphasis.

Possible emphasis areas include but are not limited to Journalism/Mass Communication, Media Law & Policy, Media/Cultural Studies, Interdisciplinary.

Comprehensive and Oral Exams

Dissertation (24 credits)

- MCMA 600-24 Dissertation (24 credits): Proposal and Defense.

Courses (CP)

404-3 Lighting for Photography. Basic concepts and essential principles of lighting technique will be thoroughly explained and investigated. Fundamental challenges in lighting arrangements and aesthetic considerations of both studio and location applications will be explored. Students will use a required text and provide photographic materials. Prerequisite: CP 330 with grade *C* or better or concurrent enrollment. Special approval needed from the department. Lab fee: \$35.

415-3 Photographic Criticism and Practice. Introduction to photographic criticism and its application in photographic practice. Through readings, writings and practical experiences, students will gain a broad-based knowledge of critical approaches to the photographic image. Prerequisite: CP 210 and 260 both with grades of *C* or better. Screening fee: \$30.

421-6 (3,3) Experimental Photographic Techniques. Experimental approaches to the creation of photographic images. Specific course content may include experimental techniques utilizing the camera, the darkroom and a wide range of additional media. Students provide materials and may

purchase texts. Prerequisite: CP 332 with grade C or better. Special approval needed from the department. Lab fee: \$35.

431-3 Applied Photography I. An introduction to professional photographic camera and lighting techniques, applied theory and business responsibilities. Students will explore a range of commercial, editorial, industrial and fine art topics that will include architecture, portrait, product and fashion. Self-promotional elements: Web portfolios, publications of all types and gallery exhibitions will be introduced. Prerequisite: CP 330 with grade C or better and pass faculty portfolio review or consent of the instructor. Lab fee: \$35.

432-3 Applied Photography II. A second advanced phase of applied photographic investigation based on the introduction outlined in CP431. Students pursue their selected area(s) of photographic specialization and create a complete portfolio. Students will receive critical feedback from professionals during off-campus trips to photographic facilities in St. Louis and Chicago. Prerequisite: CP431 with grade C or better. Laboratory fee: \$35.

436-(3,3) Documentary Photography. Exploration of techniques, history and contemporary context of documentary photography. Each student will produce an in-depth documentary photographic project. 436 may be organized as a general documentary course or have a unifying topic. Example topics include: small town, politics or the environment. Print and electronic distribution of projects will be discussed. Prerequisite: CP 330 with grade C or better or consent of the department. Lab fee: \$35.

440-3 New Media Production. The Internet is revolutionizing the way the world communicates. Students will investigate how the Internet works, as well as explore relationships among design, technology, and user experience while developing web sites, information architectures, interface behaviors, and navigation systems. Topics include: XHTML/CSS, Javascript, open source software, as well as incorporating sound, video, and images into web pages. Prerequisite: CP 260, or instructor approval. Equipment Fee: \$60.

450-3 Narrative Film Production. Narrative filmmaking, by individuals or groups, from pre-production to completion of filming, ready for post-production. Study/practice all facets of pre-production/production phases. Techniques of synchronous sound filming. Prior completion of CP 475 required for projects in HD video. Access provided to 16mm and HD cameras and lighting and sound recording equipment. Students are responsible for purchase of all materials and outside services. Prerequisite: CP 260, 276 with grade C or better and pass portfolio review. Equipment Use Fee: \$60.

452-3 Screenwriting. A study of screenplay structure for feature-length, classically-structured scripts. Includes treatments, scene-by-scene outlines, character development, and script formatting. Students are required to create original script material. Prerequisite: CP 352 with C or better. Screening fee: \$30.

453-3 to 6 Experimental Production. An introductory course aimed at students who wish to explore and expand the artistic and creative possibilities of their work. Students will engage in exercises that focus on developing conceptual creativity as well as technical skill. May be repeated as topics differ. Sample topics include: Optical Printing, Handmade Film, Collage,

Digital Compositing, Experimental Animation. Prerequisite: CP 353 with grade C or better or consent of instructor. Equipment usage fee: \$60.

454-3 Approaches for the Animation Stand. This studio production course provides the opportunity to use the traditional film animation stand, modified for use with an HD digital camera and software, to explore 3-D animation approaches, concepts, and techniques, which may include but not be limited to developmental, line, cel, cut out, rear lit, etc. Students purchase texts, art supplies, digital camera card(s), portable hard drive(s), and any additional incidentals. Prerequisite: CP 276 with C or better, or consent of department. Equipment use fee: \$30.

457-3 Documentary Production. This course will provide conceptual and hands-on experience for researching, writing and producing documentary video. This course will emphasize conceptual processes from invention of the documentary idea to post-production. Students will apply contemporary methods of criticism to the production process with particular emphasis on revision and audience. Prerequisite: CP 357 with C or better. Equipment usage fee: \$60.

460-3 to 6 (3,3) Survey of Film History. Intensive study of particular periods of cinema history, including technological developments, national and international movements, aesthetic traditions, economic and political determinations, and concerns of film historiography. May be taken twice, if topic differs. Prerequisite: CP 260 with C or better. Screening fee: \$30.

464-3 Understanding Animation: History, Theory and Technology.. This course is an introduction to the history of animation, its practitioners and its technological developments. The course introduces students to the aesthetics of the animated image and their relation to animation's unique ability to communicate. Additionally, the course discusses some of the major theoretical constructs surrounding the study of animation. Prerequisite: CP 260 with grade of C or better or consent of instructor. Screening fee: \$30.

466-3 to 6 (3,3) Film Styles and Genres. Intensive study of a specific body of films grouped by similarities in style, genre, period or cultural origin. Emphasis is on historical, theoretical and critical issues. Topics vary. Sample topics: Science Fiction Film; Film Noir; French New Wave; Third World Cinema; Surrealism in Film. May be taken twice, if topic differs. Students purchase texts. Prerequisite: CP 260 with C or better or consent of instructor. Screening fee: \$30.

467-3 to 6 (3,3) Film Authors. Intensive study of the work of one or more film authors (directors, screenwriters, etc.). Emphasis is on historical, theoretical and critical issues. Topics vary. Sample topics: the films of Alfred Hitchcock, the films of Jean Renoir; the films of Andrei Tarkovsky. May be taken twice, if the topic differs. Students purchase texts. Prerequisite: CP 260 with C or better or consent of instructor. Screening fee: \$30.

469-3 Queer Visual Culture. (Same as WGSS 440) Course discusses aspects of the aesthetics, history, theory, and politics of media representations of gender and sexuality. Cultural texts from one or a combination of media forms, genres, historical periods, and platforms, will inform the historical and theoretical consideration of media representations of gender and sexual variation with a special interest on their bearings upon the present moment. May be repeated, if topics vary.

470A-3 to 12 (3,3,3,3) Advanced Topics Cinema Studies. An advanced topics course in cinema studies: history, theory, and criticism. Sample topics: visualizing the body, feminist film theory, surveillance and the cinema. May be repeated, if topics differ. No more than twelve (12) credit hours combined from 470 Advanced Topics courses counted in the undergraduate Cinema and Photography degree. Prerequisite: CP 260 with *C* or better or consent of instructor. Screening fee: \$30.

470B-3 to 12 (3,3,3,3) Advanced Topics Film Production. An advanced topics course in film production. Sample topics: location lighting, production management, and film sound workshop. May be repeated, if topics differ. No more than twelve (12) credit hours combined from 470 Advanced Topics courses counted in the undergraduate Cinema and Photography degree. Prerequisite: CP 276 with *C* or better or consent of department. Screening fee: \$60.

470C-3 to 12 (3,3,3,3) Advanced Topics Photography. A photography production course with specialty topics which may include: narrative tableau, meta-photography, large format, etc. May be repeated, if topics differ. No more than 12 credit hours combined from 470 Adv. Topics courses counted in the first 33 credits of the Photography Specialization in the CP major. No more than 6 credit hrs of 470 Adv. topics courses counted for graduate credit. Prerequisite: CP 332 with grade *C* or better or consent of department. Lab fee: \$35.

470D-3 to 12 (3,3,3,3) Advanced Topics Interdisciplinary Studies. An advanced topics course in interdisciplinary studies between cinema and photography. Sample topics: visual perception, ethics of image making, 3-D film-making. May be repeated, if topics differ. No more than twelve (12) credit hours combined from 470 Advanced Topics courses counted in the undergraduate Cinema and Photography degree. Restricted to junior standing or higher or consent of department. Screening fee: \$30.

470E-3 to 9 (3,3,3) Topics in the History of Photography. Focused study on special topics in the history of photography. Sample topics: The Mythic American Image, The History of Color Photography, African American Photographers, The Appropriated Image, The History of the Image in Social Documentary. Prerequisite: CP 210 with grade *C* or better. May be repeated as topics vary. Screening fee: \$30.

470F-3 to 12 (3,3,3,3) Topics in Photography. An advanced topics course in photography. Sample topics: the Business of Photography, Environmental Portrait. May be repeated if topics differ. No more than twelve (12) credit hours of 470F Topics in Photography may be counted in the undergraduate Cinema and Photography degree. Prerequisite: CP 230 with a grade of *C* or better or consent of department. Screening/Lab fee: \$35.

470G-3 to 12 (3,3,3,3) Intermediate Topics in Photopgraphy. An advanced topics course in photography. Sample topics: Expanded Range Photography, Advanced digital printing. May be repeated if topics differ. No more than twelve (12) credit hours of 470G Intermediate Topics in Photography courses may count in the undergraduate Cinema and Photography degree. Prerequisite: CP 330 with a grade of *C* or better and pass portfolio review or consent of the department. Lab fee: \$35.

470I-3 to 9 (3,3,3) Topics in Film Production. An advanced topics course in film production. Sample topics: Proto-Cinematic Production, Videography. May be repeated if topics

differ. No more than twelve (12) credit hours of 470I Topics in Film Production may be counted in the undergraduate Cinema and Photography degree. Prerequisite: 102 with a grade of *B* or better or consent of department. Equipment use fee: \$60. .

470W-3 to 6 (3,3) Advanced Topics Screenwriting. An advanced topics course in screenwriting. Sample topics: experimental script to screen, adaption, comedy, autobiography. May be repeated, if topics differ. No more than twelve (12) credit hours combined from 470 Advanced Topics courses counted in undergraduate Cinema and Photography degree. Prerequisite: CP 451 with *C* or better or consent of department. Screening fee: \$30.

471-3 Film Directing. The course explores ideas, methods and theories of narrative film directing with emphases on two areas: directing filming-scene construction, coverage, staging, blocking and camera perspective; directing acting-audition, casting, rehearsal, and performing for camera. Students work in groups on a series of focused directing, acting and filming projects. Prerequisites: CP 276, with a minimum grade of *B*. Restricted to senior standing. Fee: \$60.

472-3 to 6 (3,3) Problems in Creative Production: Cinema. Intensive examination and problem solving, through readings, screenings, and filmmaking, of a cinematic genre, style, or technical challenge. Theory is combined with practice. Individual and group projects. Sample problems: cinematography, digital filmmaking, 35mm filmmaking, film as performance, optical printing. May be repeated once if topic differs. Prerequisite: CP 276 with grade *C* or better or consent of department. Restricted to junior standing. Equipment usage fee: \$60.

473-3 to 6 Advanced Experimental Strategies. An intensive production course for students who want to expand their creative possibilities and develop depth in their conceptual understanding of experimental processes and strategies in film, video or new media. May be repeated as topics differ. Sample topics include Live Art/ Generative Art, Advanced Film Arts, Poetic Autobiography, 3-D film-making, Experimental Animation, Equipment usage. Prerequisites: CP453 or 442 with grade *C* or better or consent of instructor. Equipment Usage Fee: \$60.

474-3 Optical Printing. A creative, frame-by-frame study and practice of 16mm filmmaking. Use of 16mm optical printer to complete projects, techniques include: fades, dissolves, freeze frames, step printing, multi-frame presentations, frame magnification, Super 8 enlargement to 16mm, matt construction. Students process 16mm and Super-8 film. Prerequisite: CP 276 with *C* or better. Equipment use fee: \$60.

475-3 High Definition Digital Cinematography. The course explores the new visual expression possibilities of High Definition digital medium as compared with traditional film. Aiming to understand the evolving digital motion imaging technology, the course focuses on its aesthetic and technical applications in the art of cinematography in areas of image construction, exposure control, lighting and color manipulation, and post-production workflow. Prerequisites: CP 276 with grade *C* or better. Restricted to senior standing. Fee: \$60.

496-3 Advanced Post Production. Post production on a 10-12 minute film/video in any genre. Students must have all dailies prior to enrollment. Study of editing practice and aesthetics of picture and sound editing, design, ADR, foley, and mixing

through hands-on editing, reading, screenings, and critique. The department retains a copy of the final project. Editing facilities are provided. Prerequisite: CP 276 with grade C or better or consent of instructor. Equipment usage fee: \$60.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Courses (JRNL)

400-3 History of Journalism. Development of American newspapers, magazines, and radio-television with emphasis on cultural, technological and economic backgrounds of press development. Current press structures and policies will be placed in historical perspective.

402-3 Advanced Creative Strategies. Examination of and practice in the development of persuasive, strategic campaigns and message strategies for multiple clients. Creation of a professional quality portfolio demonstrating proficiency in both traditional and new media required. Prerequisite: JRNL 302.

403-3 Media Sales. Historical perspective of media and sales philosophies and tactics grounded in sales ethics. Learn and apply relationship selling techniques enabling students to become media advertising consultants. Learn how to effectively work with local clients agencies, and national firms and balance the goals of management with the needs of clients while enhancing communication effectiveness. Prerequisite: JRNL 302 and 304.

404-3 Advanced Media Strategies and Planning. Provides an understanding of the factors that influence media strategy. Emphasis will be placed on advanced concepts such as building reach patterns, calculating effective frequency levels, in order to develop an effective media plan. Introduces media planning for the web and other new media options. Prerequisite: 304.

406-3 Advertising/IMC Campaigns. (Formerly Journalism 476) Conceptual synthesis and practical application of business, research, media and creative principles used in the formulation of persuasive messages. Includes the development of a complete integrated marketing communications (IMC) campaign for the specific advertiser. Includes all relevant target audience contact points (e.g., advertising, sales promotion, marketing public relations, event marketing, packaging) and both written and oral presentations of the campaign. Prerequisite: JRNL 303, 304, 405.

407-3 Social Issues and Advertising. Analysis of social issues involving advertising; economic relationships, government and self-regulation, cultural effects, influence on media content and structure, role in democratic processes, international comparisons, and the stereotyping of women, minorities and other audience segments.

409-3 Specialized Topics in Advertising/IMC. New developments in advertising and integrated marketing communications. Topics change each term. Repeatable up to three times as long as the topic changes. Students should check specific topic and any special requirements and prerequisites before enrolling.

411-3 Public Policy Reporting. Continued development of reporting skills with emphasis on the reporting of public policy issues and on use of statistics, the analysis of computerized data bases, and advanced techniques for the investigation of complex stories. Prerequisite: 311 or consent of instructor.

412-3 Images and Sound. Photojournalism course advancing news gathering techniques, visual, and interactive journalistic communication, and photographic content and sound. Audio recording, editing, and flash photography skills will be developed and professional and ethical aspects of photojournalism will be emphasized. Laboratory fee: \$42. Prerequisite: JRNL 313 or consent of instructor.

413-3 Advanced Photojournalism. Emphasis on in-depth photojournalistic reporting. Students research, write and photograph picture stories. Examines ethics, history and social role of photojournalism domestically and internationally. Digital imaging and an introduction to full-motion video. Students must have fully adjustable camera. Prerequisite: JRNL 412. Student supplies own materials. Lab fee: \$64.

414-3 Picture Story and Photographic Essay. Production of photographic stories and essays for newspapers, magazines and news media presentations. Students discuss, research, photograph, design and write several stories and essays, while studying the work of influential photojournalists. Student must supply own camera equipment. Prerequisite: JRNL 412 or consent of instructor. Lab fee: \$42.

416-3 Critical and Persuasive Writing. The roles and responsibilities of the editor, editorial writer and opinion columnist with emphasis upon editorial writing and critical thinking. Editorial problems methods, policies, style and the fundamentals of persuasion and attitude change form the basis for study. Prerequisite: JRNL 311.

417-3 Freelance Feature Writing. Identification, research and application of creative writing techniques in producing feature articles for various media. Students analyze reader appeal as well as feature story structure and methods of marketing features to various audiences and publications. Laboratory fee: \$42. Prerequisite: JRNL 310.

419-(3,3,3) Specialized Topics in News Reporting. Develops detailed reporting expertise in such topics as business, environment, education, arts and entertainment, health and medicine, sports, new media, etc. Repeatable up to three times as long as the topic changes. Prerequisite: JRNL 311 or consent of instructor. Laboratory fee: \$42.

426-3 Online Journalism. Examination of emerging forms of news delivery by computer and related convergence of print and broadcast media. Apply concepts and theories and skills in projects, and web-news content management as a real world setting for the production of professional-level cyber-clips for an online portfolio. Includes the production of news stories via email, cellular and other evolving media environments. Prerequisites: Grade of C or better in JRNL 302 or JRNL 310 and JRNL 396.

434-3 Media Ethics. (Same as PHIL 434) Explores the moral environment of the mass media and the ethical problems that confront media practitioners. Models of ethical decision-making and moral philosophy are introduced to encourage students to think critically about the same mass media and their roles in modern society.

435-3 Advanced Graphic Communication. Continues development of message design skills. Emphasizes creative solutions to the display of complex content in a wide variety of media. Laboratory fee: \$46. Prerequisite: JRNL 335 or consent of instructor.

436-3 Multimedia Publication Design. Building upon the basic skills learned in publishing on the WWW, the course continues the exploration of using computer-based technologies for presentation of information to wide audience using the interactive capabilities of the internet and other new media. Focus is on organization of information, design of presentation, use of transaction-generated information, and the production of multimedia files in a networked environment. Includes discussion of topics including privacy intellectual property, libel, and other matters of concerns to an interactive publisher. Course fee: \$42. Prerequisite: Mass Communication and Media Arts 396.

450-3 Account Planning and Consumer Research. Introduces the field of account planning. Provides an understanding of how consumer research influences and informs the creative process. Learn to use qualitative research methods that are used in consumer research, writing creative briefs that are effective and provide insights for creative team. Prerequisite: 405.

481-3 Sports Reporting. Sports reporting requires two essential ingredients: the ability to write compelling prose and a good grip on news gathering and reporting techniques. This course emphasizes both and utilizes students' interest in sports to advance their reporting skills while preparing them for sports reporting positions in the media industry. Prerequisite: JRNL 310 or RTD 310.

488-3 Sports Communication and Promotion. This course will expose students to the rapidly expanding and complex world of sports business, with an emphasis on sports communication and promotion. Topics include, but are not limited to, packaging proposals for event sponsorship, event promotion and management, effective strategies to maximize product and corporate exposure through media partnerships, and client representation.

494-1 to 6 Practicum. Study, observation, and participation in publication or broadcast activities and related areas. Special approval needed from the instructor and area head. Mandatory Pass/Fail for undergraduates.

495-1 to 12 (1 to 6, 1 to 6) Proseminar. Selected seminars investigating media problems or other subjects of topical importance to advanced journalism majors. Seminars will be offered as the need and the interest of students demand. Restricted to senior standing.

599-1 to 6 Thesis.

600-1 to 24 (1 to 16 per semester) Dissertation.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Courses (MCMA)

500-3 Media as Social Institutions. Provides an introduction to major issues involving media in contemporary societies. Multi-disciplinary in nature, the course introduces major theoretical perspectives used in reviewing media productions and activities and the relationships among media organizations and practitioners and other institutions of society. Restricted to: CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

501-3 Intellectual Property and the Law. Examines intellectual property in legal, economic, and cultural terms. Topics may include copyright, patents, trademarks, entertainment law, and infringement. Restricted to: CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

502-3 Media Economics. Introduction to political economy of the media. Addresses core concepts, theories, and methods used to understand media as cultural industries. Restricted to: CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

503-3 Media and Technology. A survey of the major technological changes in mass media and their impacts on society and the media industries. On completion of the course students should have a basic understanding of the role of media technology in shaping communication patterns and their social outcomes. Restricted to CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

504-3 Foundations of Mass Communication Theory. Principal theoretical approaches to media analysis, addressing empiricist, cinema studies, media studies and cultural studies research paradigms. Historical and cultural contexts of media theory construction. Focus on original text. Restricted to: CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

505-3 Advanced Theoretical Issues in Media Communication. Analysis and critique of advanced and recent theory and research trends in media studies, cultural studies, communication technology studies and mass communication research. Prerequisite: MCMA 504. Restricted to CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

506-3 Law and Policy of Mass Communication. Focuses on free expression in journalism and entertainment across the media. Topics may include news gathering techniques, intellectual property, the Internet, and governmental regulation. The course pays special attention to the tension between what is legal and what is ethical. Restricted to: CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

507-3 Media Management. Analysis of a variety of media industries, including industry structures and the industry processes of media development, production, and distribution. Attention to management of media companies across sectors as the industry adjusts to economic and technological change. Restricted to CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

508-3 Conceptual Foundations of Research Strategy. Analysis

and evaluation of conceptual frameworks underlying empirical research strategies, positivist, textual and qualitative, commonly used in media and internet research. Issues in multi-method research strategies are reviewed. Ethical implications are debated. Restricted to CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

509-3 Media Ethics. Overview of ethics philosophies and accountability tools for the mass media. Areas to be studied include journalism reviews, ethics codes, ombudsmen, media critics, news councils, and public/civic journalism. Covering issues in journalism, photojournalism, public relations, advertising, new media, and “infotainment.” Restricted to CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

511-3 New Media Production. Investigates how the internet works, explore relationships among design, technology, and user experience while developing web sites, information architectures, interface behaviors, and navigation systems. Topics include: HTML and XHTML authoring, Cascading Style Sheets, Javascript, open source software, and incorporating sound, video, and images into web pages. Issues of privacy, legal and ethical responsibilities for consumers and producers of web content. Restricted to MCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

512-3 Web and Interaction Design. The Web is part of a larger environment that constantly evolves in relation to social and technological developments. Design principles, HTML5 authoring, cascading style sheets and web usability. Investigates the design of online experiences through lectures, discussions, workshops, and projects. Relationships are explored among design, technology, and user experience in the context of contemporary Internet cultures and develop skills in designing information architectures, interface behaviors, navigation systems, and typographic and image strategies for the Web. Prerequisite: New Media Production or an introductory web production course with permission of the instructor. Restricted to MCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts. Lab Fee: \$50.

513-3 Media Management of Civil Society Organizations. Investigate the multiple roles, contributions, and approaches employed in developing communication and media efforts of civil society organizations (NGOs, NFPs, NPOs), especially the role of the Communicator, or Media Officer. Students will be able to assess this as a professional option and be equipped with a conceptual and practical ‘tool box’ for succeeding in this role. Restricted to MCMA major or consent of instructor or Associate Dean of Graduate Studies in Mass Communication and Media Arts.

516-3 NET.ART. History, theory, and practice of digital media as an online art form. Examine and produce works in linear and non-linear hypermedia narrative, network conceptualism, and generative software. Issues include identity, location, collaboration, surveillance, hacktivism, tactical media, immersion, game design, media synthesis. Restricted to MCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts. Lab fee: \$20.

530-3 Historical Research in the Mass Media. Covers a variety of approaches to historical research used by media scholars. Examines how scholars conceive of their object of study, use primary sources, and how they construct the basis of the narrative and analytic discussions of their topic. Focus on historiography and methodology, including data collection, analysis, organization and presentation. Students will use sources including but not limited to newspapers, archives, personal papers, manuscripts, and oral histories. Restriction: MCMA major or consent of instructor.

531-3 Critical Research Methods in Media Arts. This course introduces students to critical and interpretive research methods and techniques for the study of media arts and culture. It focuses on interdisciplinary approaches and covers a range of methods and theoretical perspectives that may include historiography, ideological and textural analysis, semiotics, psychoanalysis, critical ethnography and auto-ethnography, and/or other critical methods. Areas of emphasis may vary by instructor. This course may be repeated when the topic differs. Prerequisite: MCMA 551. Restricted to CMCMA major or consent of instructor or director of graduate studies in Mass Communication and Media Arts.

532-3 Quantitative Research Methods in Mass Communication. Identification of relevant research topics, critical evaluation of existing research literature, and development of a detailed research proposal. Emphasis on quantitative methods such as sampling, surveys, research design, experiments, content analysis, and introductory statistics. Restricted to CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

534-3 Qualitative Research Methods. An introduction to the intellectual underpinnings, epistemology, and methodologies of qualitative research. The course focuses on critical and interpretive approaches to researching media industry structures, artifacts, audiences, and producers. Restricted to CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

535-3 Textual Analysis. This class examines methods of textual analysis in the media arts with references to their historical, theoretical, and practical contexts. Restricted to MCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

536-3 Media Content Analysis. Overview of methods and problems of systematically analyzing mass media messages with critique of published studies. Experience in conducting a content analysis project on a topic of current scholarly significance in mass communication and media arts. Prerequisite: MCMA 532. Restricted to CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

539-3 Legal and Governmental Research in the Mass Media. Research procedures used to find and analyze documents generated by executive, legislative, and judicial entities. Prerequisite: MCMA 506. Restricted to CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

540-3 Critical Documentary Practices. Documentary is both a product of existing social conditions and a form of critical opposition to them. This course will emphasize independent

video production from invention of the documentary idea to post-production. Emphasis on connections between critical theory and media production. Students will embrace the conceptual and hands-on process of researching, writing and producing independent documentary video, focusing on critical arts practice. Restricted to CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communications and Media Arts.

543-15 (1-3,1-3,1-3,1-3) Media Arts Studio Seminar. A forum for the pursuit of creative projects in the media arts. May be repeated as the topic changes. Laboratory fee: \$50. Restricted to: CMCMA MFA or PMMM major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

546-6 (3,3) Seminar Film Theory. Advanced study of major currents in film theory and intensive consideration of particular topics in film theory. Discussion of early debates about aesthetics, perception and realism; linguistically modeled, structuralist, formalist and psychoanalytic theories; ideological, deconstructionist, feminism reception and other postmodern theoretical trends. Special topics might include: feminism and film, Freudian concepts for film, Marxism and film, film and language, formalist film theory, spectatorship, film and perception. Intensive weekly reading and discussion. Films are screened in relation to theoretical topics and assigned readings. Screening fee: \$20. Restricted to admission to the cinema concentration in the CMCMA M.F.A. program or consent of instructor.

548-1 to 9 MFA (Master of Fine Arts) Projects. Supervised independent creative work in media arts, the exact nature of which is to be determined in consultation with the M.F.A. faculty member. Restricted to CMCMA M.F.A. major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts. Equipment usage fee: \$50.

549-3 Professional Documentary Practice. Production students will work with experts from a variety of specializations across campus to produce short form documentaries for broadcast on WSIU. A comprehensive overview of producing successful programs for the industry taking the topic from scripting to filming to editing. Advanced video or audio production skills are required. Restricted to CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

550-3 History of Media Arts and Culture. Introduces the history of the reproducible media arts, beginning with their prehistory in printmaking, and focusing on photography, cinema, radio, television, video, and other visual, audio, and digital media. Locates media technologies in the historical, material conditions of their emergence, consider how media interact with and make history, how media art forms and movements arise historically and how these relate to mass media. Restricted to CMCMA MFA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts. Screening Fee: \$35.

551-3 Theory of the Media Arts. A survey of the major theoretical debates about the reproducible media arts with particular emphasis on the relationship between mass media, new media technologies, and art. Debates will be grounded in the study of aesthetic practices, technological innovations,

political-economic settings, and overall historical context within which they emerged. Screening fee: \$35. Prerequisite: MCMA 550. Restricted to CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

552-3 Seminar: Topics History and Theory of Media Arts. This course provides an in-depth study and discussion of selected topics in the history and theory of the media arts. Topics vary and will be announced in advance. This course may be repeated when the topic differs. Restricted to MCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts. Screening Fee: \$35.

555-3 to 15 (3,3,3,3,3) Topical Seminars. Seminars on subjects of current interest, with the topics determined through students and faculty request and interest. Restricted to CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

557-6 (3,3) MFA (Master of Fine Arts) Studio Arts Practice. The first-year course for all incoming M.F.A. (Master of Fine Arts) student in the college serves as an introduction to media creation strategies and concepts. The emphasis is on aesthetic and conceptual development as encountered within a variety of media arts. The course is team taught by a number of faculty in modules dedicated to various media forms-still image, time-based, spatial, and interactive. Restricted to admission to the MFA program in the College of Mass Communication and Media Arts or consent of instructor or the director of Graduate Studies in Mass Communication and Media Arts. Lab fees \$75.

558-9 (3,3,3) MFA (Master of Fine Arts) Studio Critique. This critique-based seminar course is offered each semester to all graduate students in the M.F.A. program except those in their last semester of thesis work. The goal for this course is to create an interdisciplinary forum where students develop research skills, learn how to best articulate their artistic production, and critique their peers' works. Restricted to MCMA M.F.A. student or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts. Lab fee: \$75.

560-3 Studies in Media History. Examine the histories and social effects across media including: books, newspapers, magazines, film, radio, television and the internet. This study will investigate the conceptual dimensions of communication history by examining social, economic, cultural, and political histories of the field. Restricted to MCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

561-3 Communication for Social Change. Evolution of communication and social change theories and practices; contextual factors (including aid, trade and development policies); organizations influential in formulating and implementing policy; communication intervention strategies; evolving journalism practices. Restricted to CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

562-3 Significant Studies in Mass Communication Research. A review of a broad selection of early literature in communication research that has provided much of the conceptual basis for empirical studies during the past two decades.

563-3 Globalization and the Media. Debates about globalization from historical, theoretical, and critical perspectives. The major

uses of communication technologies in international economic, political, and cultural processes. Topics include regional and global trends, trade regimes, global policy bodies and policy issues; global media influence. Restricted to: CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

564-3 Political Economy of Media. Addresses the intersections of politics, economics, and social structures that underpin media arts and industries at global and national levels. Emphasizes the relationship between theories and methods. Restricted to CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

565-3 Strategic Advertising Communication. Problem solving through strategic advertising communications and functional marketing communication, including branding, advertising, PR, sales promotion and direct response in an integrated program. The focus is on strategy and planning, and students will concentrate on integrating targets, timing and message strategy. Restricted to: CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

566-3 Brand Management Communication. A conceptual synthesis and practical application of business, research, media, and creative principles used in the formulation for a branding/advertising campaign. It includes the development of a complete integrated marketing communications (IMC) campaign for a specific brand. Restricted to CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

568-3 Social Media Theory and Practice. Explores social media from various perspectives. Topics will cover history and development of social media, social advertising/marketing, citizen journalism, social media and health communication, and other issues related to social media such as privacy, gaming, interface design, identity, etc. Students will gain hands-on experience with social media. Restricted to CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

569-3 Alternative Media: Power and Resistance. Explores "alternative media" as counter hegemonic practice. Course examines various forms of alternative media and different meanings ascribed to them. Case studies locally and around the world demonstrate the growing relevance of alternative media in contemporary societies and the complex relationships they navigate with political and social movements, governments, the private sector, and main-stream forms of media. Restricted to CMCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

582-3 Game Narratives. Teaches students the core ideas and practices of game narratives. It covers:

- a) The conceptual fundamentals of theories of game narrative design;
- b) The technical and organizational process of creating a narrative game. This includes designing and implementing a narrative game using an appropriate software tool.

While game narrative is at the center of this course, the skills and knowledge acquired in this class are applicable to broad range of design-centric fields and contexts. Prerequisites: consent of instructor or director of graduate studies in MCMA

586-1 to 6 Professional Media Projects. Supervised independent media production work, the amount and exact nature of which is to be determined in consultation with MCMA faculty. More than one section may be taken in the same semester. Restricted to PMMM major or consent of instructor or director of graduate studies in MCMA. Lab fee: \$50.

589-3 M.S.Report/Project. Research report or media project accompanied by an abbreviated research report, directed by a minimum of one member of the graduate faculty in the CMCMA. The research report, which is the synthesis of existing literature on a specific topic or the contextualization of an original media project, must be submitted to the Graduate School. Public presentation of the project required. Restricted to: PMMM major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

591-1 to 6 Readings. Supervised readings on subject matter not covered in regularly scheduled courses. Graduate students limited to three credits per semester. Special written approval needed from the instructor and area head.

592-3 Master's Seminar. This course orients students to graduate level study in mass communication and media arts. Applied general research skills, literature reviews and proposal writing among other topics are covered. Students work on directed-projects, culminating in a proposal for future research or media production. Restricted to MCMA major or consent of instructor or associate dean of graduate studies in Mass Communication and Media Arts.

594-3 Practicum. Study, observation and participation in activities related to the fields of Mass Communication and the Media Arts such as internships in related professional organizations. Restricted to CMCMA major or consent of instructor or director of graduate studies in Mass Communication and Media Arts.

595-3 Ph.D. Proseminar. Provides PhD students in the College of Mass Communication and Media Arts a general orientation to the program. Forum for further discussion of topics and issues raised in visiting lectures scheduled through the college which students will be required to attend. Provides a framework for preparation for the annual MCMA research convention at which students will be required to present. Restricted to MCMA major or consent of instructor or associate dean of Graduate Studies in Mass Communication and Media Arts.

596-1 to 6 (1 to 3 per semester) Independent Study. Supervised research or independent creative work, the area of study to be determined by the student in consultation with instructor. Special written approval needed from the instructor and area head.

599-1 to 6 Thesis. Thesis requirements may be satisfied only by a written thesis for an M.A. in Media Theory and Research and by a creative thesis for an M.F.A. in Mass Communication and Media Arts. Minimum of three hours required for the M.A. in M.T.R. degree and minimum of six hours required for MFA in MCMA. Graded *S/U*. Restricted to M.T.R. or M.F.A. major.

600-1 to 32 (1-12 per semester) Dissertation. Minimum of 24 hours to be earned for the Doctor of Philosophy degree.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis or research paper. The student must have completed a minimum

of 24 hours dissertation research or the minimum thesis or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Courses (RTD)

403-3 Lighting for Television. Covers typical lighting situations encountered in the field of television. Practical exercises are used extensively. Prerequisite: RTD 365A or concurrent enrollment. Restricted to Radio, Television, and Digital Media Majors. Lab fee: \$55.

405-3 Media Economics. Focus on economic and financial forces affecting the media industries. Study of the economic practices and impacts of corporate mergers and synergies, global integration of media firms, multi-stream revenue generation, barriers to entry and regulatory constraints. Prerequisite: *C* or better in RTD 200. Special approval needed from the instructor.

450-3 Television Documentary Production and Technique. An overview of the development of various types, styles, and schools of major documentary production including analysis of American and International documentaries. Students will also research, write, and produce several short-form documentaries. Prerequisite: RTD 365A or consent of instructor. Restricted to RTD majors and senior standing. Lab fee: \$55.

455-3 Oral History, Storytelling and Media. (Same as HIST 498) This course will develop an appreciation of the field of oral history, methodological concerns and applications. Students will learn about the oral history process, including interview preparation and research, interview technique, the nature and character of evidence, transcribing, and legal and ethical concerns. Restricted to Junior or Senior standing.

457-3 Media Marketing. The core issues of marketing media products in a variety of contexts, such as launching a television program or series, opening a film, introducing an Internet website or application. Attention to branding and media planning, including developing an online marketing strategy. Laboratory fee: \$45. Prerequisite: *C* or better in RTD 200. Special approval needed from the instructor.

461-3 Visual Effects in Post. This course teaches the understanding and creation of contemporary visual effects work. We will cover both the science and art of visual effects covering motion graphic design principles (including typography), traditional techniques (storyboarding, mattes, masks, adjustment layers), chromakey compositing, 2D graphic animation, and CGI motion matching for 2D and 3D shots. Production workflows and client management will also be covered. The skills learned will be useful in pursuing a career in many media industries, including television, cinema, and games. Restricted to junior and senior level. Special approval needed from the instructor. Prerequisite: RTD 201 with a grade of *C* or better.

463-3 Sound Art and Practice II. This course allows students to explore sound as an art form. During the semester, students create original sound works and learn hands-on approaches to technology, which include building low cost microphones. Experimental sound synthesis and original approaches to creative sound will be explored as well as methods of collaboration and exhibition. Special approval needed from the

instructor. Lab Fee: \$55.

464-3 Audio Documentary and Diversity. (Same as WGSS 464) This course is the creation of short and long form audio documentaries by students, regardless of production background. Introduces students to basic production techniques and diversity considerations during the making of a documentary. This course uses qualitative methods to investigate an issue or to document an event, with an emphasis on observation and interview techniques. Topics will explore the role of gender, race, ethnicity and class during the planning, gathering and production stages of the documentary. Course open to non-majors. Laboratory fee: \$55.

465-3 Advanced Television Production. Instruction and practical experience in the development of programming for television. Students will produce individual and/or small group projects for broadcast and follow the projects through from concept to completion. Prerequisite: RTD 365A or consent of instructor. Restricted to RTD majors and senior standing. Lab fee: \$55.

466-3 Motion Graphics. Using current motion graphics software, students build skills in visualization and messaging while creating animated graphics packages, titles sequences and short animated videos. Recommended: RTD 331 or equivalent graphics experience. Lab fee: \$50.

467-3 Global Media. Global media history, main theories, and current developments. The significance of global trends for local and regional media and cultures. Prerequisite: *C* or better in RTD 200 and RTD 300. Restricted to senior standing, or consent of instructor.

469-3 Video for Non-majors. Basic shooting and editing for students interested in using video for purposes other than professional television production, such as education, business, or Web page development. The course surveys video formats and applications. Students produce projects using editing and special effects. Credit not given to RTD majors. Lab fee: \$55. Special approval needed from the instructor.

470-3 Television News Field Production. Advanced field reporting for television. Students will work under the supervision of the instructor to develop, investigate and report news stories for television. This process will also study the development and production of the mini-documentary. Class will utilize professional grade video recorders, cameras and editing systems. Lab fee: \$55. Prerequisite: 370 or consent.

475-3 MIDI Production Studio. Comprehensive study of sequencing techniques, editing, sampling and hardware and software based instruments will be applied with hands-on exercises and projects. Skills developed in this course will enable students to creatively utilize the most current MIDI technology for use in writing, arranging, recording and manipulating music and audio for albums, jingles, and film/television. Prerequisite: RTD 375 or consent of instructor. Lab fee: \$55.

476-3 Creative Audio Producing. This course puts the student in the role of recording producer, including responsibility for all decision-making during project development and production. Includes selection of material, budgeting, contracts, scheduling, performances, and all aspects of recording. Emphasis is placed on communication with clients, artists and engineers. Related elements include publishing, copyright and contracts. Prerequisite: MUS 375 or RTD 375, or consent of instructor.

Lab fee: \$55.

477-3 Investigative Reporting for TV, Radio and Online. Each student will choose one topic and produce a story with multimedia elements. Students will do in-depth research, conduct interviews, and investigate issues and topics of their choice with approval of the instructor. The latest investigative techniques will be explored as well as legal and ethical issues. Stories may air on public television or radio or appear online. Prerequisite: RTD 300. Lab fee: \$55.

479-3 Multi-Camera Field Production. Concentration on the techniques, conventions and implementation of live-event, multi-camera production in the field, including concerts, awards shows, and sports. Lab Fee: \$55. Prerequisite: RTD 365A and RTD 365B or consent of instructor.

480-3 Emerging Media. Examination of developments in emerging media, including Internet applications, mobile media, and gaming, among others. Exploration of the impact of emerging media on traditional media cultures and economies. Restricted to Senior standing or consent of instructor.

483-3 Script to Screen I: Writing the Pilot. In sequence with RTD 484, Script to Screen II, this course concentrates on scriptwriting for serial fictional television-situation comedies and drama. Students analyze structure, form, style and content of TV shows and scripts. They will write the "bible" for an original series as well as the pilot episode for that series. Some scripts will be produced in RTD 484. Prerequisites: RTD 365A or consent of instructor. Lab fee: \$45.

484-3 Script to Screen II. In sequence with RTD 483, Script to Screen I. In this course, students produce a pilot for sitcom or dramatic television program, from scripts written by students in RTD 483. Topics include casting, budgeting, scheduling, script analysis, location management, production design, staging, lighting, directing and acting for the camera. Lab Fee: \$55. Restricted to Senior Standing. Prerequisite: C or better in RTD 365A and RTD 365B, or consent of instructor.

485-3 Digital Post Production. Students will examine all aspects of the postproduction process. The course combines editing theory and practice with critiquing professional programs and practical editing exercises. Laboratory fee: \$55. Prerequisite: 365.

487-3 3D Animation I: Modeling. In this course, students will gain a solid foundation in creating 3D computer graphics using industry standard computer software and hardware. Through analysis and practice, students will develop an understanding of the principles of 3D modeling, lighting, texturing and rendering. Conceptual design and professional practices will also be addressed. Skills learned in this course will prepare students for the 3D Animation II class. Lab Fee: \$55.

488-3 Animation II: Animation & Visual EFX. This intermediate course builds upon the skills learned in the 3D Animation I course, and will focus on narrative development, motion design and visual effects generation using industry standard practices. Topics include key frame animation, inverse kinematics, and visual effects using dynamics. A term project utilizes the creative and technical skills explored in class. Prerequisite: C or better in RTD 487 (3D Animation I). Lab Fee: \$55.

489-2 to 9 Electronic Media Workshop. Advanced work in various areas of electronic media, such as Gender and Media, Children and Media, Blaxploitation, Television in the US.

Special approval needed from the instructor. Lab fee: \$55.

490-3 3D Animation III: Production Studio. This advanced course builds upon the skills mastered in the 3D Animation I and II courses. Students walk through the 3D animation production cycle to produce a high-quality 3D animation suitable for portfolio exhibition. Class critiques and project analyses are used to direct students through the production process. This course advances students' knowledge of industry-standard practices. Prerequisites: RTD 487, or RTD 488, or MCMA 497. Lab Fee: \$55.

492-3 Advanced Electronic Media Studies Workshop. Advanced topics in Media Studies such as Children and Media, Gender and Media, Race and Media. Restricted to Junior and Senior standing or consent of instructor.

496-3 Sound and Moving Image. This course examines in detail the relationship of sound and moving images. It traces intertwined histories, revealing important collaborations and technological developments that set precedents for both film and video. While the primary focus of this course is the artistic creation of soundtracks, we will also explore musical scoring and orchestration as utilized by film and television composers. Students will learn about and create sound designs, Foley sound and mix to picture sessions. Special approval needed from the instructor. Lab fee: \$55.

Mathematics and Science Education

COLLEGE OF EDUCATION AND HUMAN SERVICES AND COLLEGE OF SCIENCE

Graduate Faculty:

Bu, Lingguo, Associate Professor, Curriculum & Instruction, Ph.D., Florida State University, 2008. MSMSEd Co-director.

Henson, Harvey, Assistant Dean, College of Science, Ph.D., Southern Illinois University Carbondale, 2015, MSMSEd Co-director.

Wright, Mary H., Professor, Mathematics, Ph.D., McGill University, Montreal, Quebec, 1977. MSMSEd Co-director.

Purpose of the Program

This interdisciplinary M.S. degree program is designed to offer advanced training in mathematics and science education for elementary and middle school teachers. It is designed specifically for in-service teachers seeking additional content knowledge, pedagogical content knowledge, and leadership skills in mathematics and science education. This is a non-thesis, non-research paper program. Candidates are required to complete an Action Research project in lieu of a thesis or research paper. Upon completion of the program, candidates will be eligible for an endorsement in mathematics and science. Program faculty are drawn from various departments in the College of Science and the College of Education and Human Services.

Admission. Prospective graduate students should have an undergraduate degree in Elementary Education, or closely related field, and should already be certified elementary (K-5, 4-8 or K-8) teachers in Illinois. All application materials should be submitted to any one of the Program Co-directors. Students are required to submit official transcripts from all U.S. schools attended during their last two years of undergraduate study, and also for all graduate work completed. Transcripts are not required from institutions where the student received no degree and was not enrolled for more than 12 semester hours of undergraduate credit, provided that the grades obtained at such institutions are recorded upon the transcript of the college which granted the student's degree. This program requires a nonrefundable \$65.00 application fee, which must be submitted with the application for admission to the program. Applicants must pay this fee by credit card. Applications for admission to the program will be reviewed by the Program co-directors. Upon recommendation of the co-directors, the application will be forwarded to the Graduate School for approval.

Requirements

Foundation Courses

Math 411-3	Mathematical Topics for Teachers (3 credits).
Science 503A-3	Science for Elementary School Teachers (3 credits).
CI 522-3	Integration of Technology into Science and Mathematics Teaching (3 credits).

Content Courses

BIOL 500-3	Contemporary Biology for Teachers (3 credits).
CHEM 506-3	Chemistry Topics for Teachers (3 credits).
GEOL 585-3	Earth and Space Science for Teachers (3 credits).
MATH 511-3	Advanced Topics in the Teaching of Mathematics (3 credits).
PHYS 575-3	Special Physics Topics for Teachers (3 credits).

Educational, Pedagogical and Leadership Courses

CI 593 (d) (for science) OR CI 593 (e) (for mathematics)	Individual Research in Education (Action Research) (3 credits).
CI 428-3	Science Methods and Curriculum Development for K-8 (3 credits).
CI 530-3	Teaching Problem Solving in School Mathematics (Grades K-8) (3 credits).
CI 539-3	Math Science Leadership (3 credits).

Retention and Graduation. Students in the MSMSEd program are expected to complete the program in 2 academic years and 2 summer terms. Courses offered during the academic year are offered in a flexible on-line or distance-learning format. Laboratory or field experiences may require an additional commitment of 2-3 Saturdays each semester. Summer courses are offered at various SIU service centers in Southern Illinois.

Approval for graduation requires completion of all required coursework and the Action Research project with a grade of C or better, and an overall GPA in the program of 3.0 or better.

Mathematics

www.math.siu.edu/
mathgradinfo@math.siu.edu

COLLEGE OF SCIENCE

Graduate Faculty:

Ban, Dubravka, Associate Professor, Ph.D., University of Zagreb, Croatia, 1998; 2002. Algebra, Representation theory, Automorphic L-functions.

Bhattacharya, Bhaskar, Professor and *Interim Chair*, Ph.D., University of Iowa, 1993; 1993. Order restricted statistical inference, I-projections, linear models, multivariate analysis.

Burton, Theodore A., Professor, *Emeritus*, Ph.D., Washington State University, 1964; 1966.

Calvert, Wesley, Assistant Professor, University of Notre Dame, 2005; 2010.

Choiy, Kwangho, Assistant Professor, Ph.D., Purdue University, West Lafayette, 2012; 2015. Number Theory, Automorphic Forms and Representation Theory.

Clark, Lane, Professor, *Emeritus*, Ph.D., University of New Mexico, 1980; 1991. Combinatorics and graph theory.

Crenshaw, James A., Associate Professor, *Emeritus*, Ph.D., University of Illinois, 1967; 1967.

Danhof, Kenneth, Professor, *Emeritus*, Ph.D., Purdue University, 1969; 1969.

Dharmadhikari, Sudhakar, Professor, *Emeritus*, Ph.D., University of California, Berkeley, 1962; 1978.

Earnest, Andrew G., Professor, *Emeritus*, Ph.D., Ohio State University, 1975; 1981.

Feinsilver, Philip, Professor, *Emeritus*, Ph.D., New York University (Courant), 1975; 1978.

Fitzgerald, Robert W., Professor, *Emeritus*, Ph.D., University of California-Los Angeles, 1980; 1982.

Foland, Neal E., Professor, *Emeritus*, Ph.D., University of Missouri, 1961; 1965.

Grimmer, Ronald C., Professor, *Emeritus*, Ph.D., University of Iowa, 1967; 1967.

Hooker, John W., Professor, *Emeritus*, Ph.D., University of Oklahoma, 1967; 1967.

Hughes, Harry R., Associate Professor, Ph.D., Northwestern University, 1988; 1989. Stochastic processes, stochastic geometry.

Hunsaker, Worthen N., Professor, *Emeritus*, Ph.D., Washington State University, 1966; 1969.

Jeyaratnam, Sakthivel, Professor, *Emeritus*, Ph.D., Colorado State University, 1978; 1981.

Kammler, David W., Professor, *Emeritus*, Ph.D., University of Michigan, 1971; 1971.

Kirk, Ronald B., Professor, *Emeritus*, Ph.D., California Institute of Technology, 1968; 1968.

Koch, Charles, Assistant Professor, *Emeritus*, Ph.D., University of Illinois, 1961; 1966.

Kocik, Jerzy, Associate Professor; Ph.D., Southern Illinois University, 1989; 2002. Differential Geometry and Lie Algebras.

Langenhop, Carl E., Professor, *Emeritus*, Ph.D., Iowa State University, 1948; 1961.

Mark, Abraham M., Professor, *Emeritus*, Ph.D., Cornell

University, 1947; 1950.

McSorley, John, Professor, Ph.D., University of Oxford, England, 1988; 2004. Combinatorics, graph theory, design theory.

Mohammed, Salah-Eldin A., Professor, *Emeritus*, Ph.D., University of Warwick, England, 1976; 1984.

Moore, Robert A., Associate Professor, *Emeritus*, Ph.D., Indiana University, 1961; 1965.

Neuman, Edward, Professor, *Emeritus*, Ph.D., University of Wroclaw, Poland, 1972; 1984.

Olive, David, Professor, Ph.D., University of Minnesota, 1998; 1999. Applied robust statistics, regression graphics, applied probability.

Paine, Thomas B., Assistant Professor, *Emeritus*, Ph.D., University of Oregon (Eugene), 1966; 1966.

Panchapakesan, S., Professor, *Emeritus*, Ph.D., Purdue University, 1969; 1970.

Patula, William T., Professor, *Emeritus*, Ph.D., Carnegie-Mellon University, 1971; 1972.

Pedersen, Franklin D., Associate Professor, *Emeritus*, Ph.D., Tulane University, 1967; 1965.

Pericak-Spector, Kathleen A., Professor, Ph.D., Carnegie-Mellon University, 1980; 1981. Hyperbolic partial differential equations, continuum mechanics, science education.

Redmond, Donald, Associate Professor, Ph.D., University of Illinois, 1976; 1979. Analytic number theory, elementary number theory, classical analysis, history of mathematics.

Samadi, S. Yaser, Assistant Professor, Ph.D., University of Georgia, 2014; 2014. Multivariate and Matrix Time Series Analysis.

Schurz, Henri U., Professor, Ph.D., Humboldt University (Berlin), 1997; 2001. Stochastic analysis, stochastic dynamical systems, mathematical finance.

Spector, Scott J., Professor, *Emeritus*, Ph.D., Carnegie-Mellon University, 1978; 1981.

Sullivan, Michael C., Professor, Ph.D., The University of Texas at Austin, 1992; 1996. Topological Dynamics.

Wallis, Walter D., Professor, *Emeritus*, Ph.D., University of Sydney, 1968; 1985.

Wright, Mary H., Professor, Ph.D., McGill University, Montreal, Quebec, 1977; 1980. Rings and modules: structure of modules, prime ideals and localization over serial rings with Krull dimension.

Xiao, Mingqing, Professor, University of Illinois at Urbana-Champaign, 1997; 1999. Partial differential equations, dynamical systems, control theory and applications

Xu, Dashun, Associate Professor, Ph.D., Memorial University of Newfoundland, St. John's, Canada, 2004; 2006. Mathematical biology.

Xu, Jianhong, Associate Professor, Ph.D., University of Illinois, 1997; 2005. Partial differential equations, control theory, optimization theory, dynamical systems, computational science.

Yucas, Joseph, Professor, Ph.D., *Emeritus*, Pennsylvania State University, 1978; 1980.

Zeman, Marvin, Professor, *Emeritus*, Ph.D., New York University, 1974; 1979.

The Department of Mathematics offers graduate degree programs leading to the Master of Arts or Master of Science degree in mathematics and the Doctor of Philosophy degree in mathematics. Students in the master's program can choose from a rich assortment of courses in both pure and applied mathematics and statistics. Each master's degree candidate works closely with a professor in writing a research paper in an area of interest to the student. A double major at the master's level between mathematics and a related discipline is also an option. At the doctoral level, a student may specialize in any one of a large number of fields such as algebra, applied mathematics, combinatorics, computational mathematics, control theory, differential equations, geometry, numerical analysis, probability, or statistics. Interdisciplinary programs are also available.

The department is committed to providing a challenging and rewarding experience for its graduate students. With over 30 graduate faculty and approximately 33 full-time graduate students, the department offers individual attention and mentoring, strives to establish a friendly, supportive environment, and assists students as much as possible to achieve their professional goals. Graduate students have 24 hour access to the departmental computer lab which has thirty state of the art PCs, all with internet connections. For more computing needs, students can access the university Unix computer servers from the lab.

Students interested in the teaching of mathematics may select a minor concentration in education within the Master of Science program in mathematics. Minor work for graduate degrees in other fields, which allow for a minor, is also offered.

Acceptance for graduate study in mathematics and subsequent continuation in the graduate program are at the discretion of the Department of Mathematics, provided that the student has been admitted to the Graduate School and meets the retention standards of the Graduate School. All applicants for the graduate program are considered for teaching assistantships. In order to be considered for a fellowship the applicant must take the GRE exam, and all applicants are strongly encouraged to take the GRE General Test.

Prospective students are encouraged to contact the Department of Mathematics at <gradinfo@math.siu.edu> or the web site at <www.math.siu.edu> for application forms or additional information.

In addition to the general rules, regulations, and requirements of the Graduate School, the following specific requirements pertain to the degrees available in mathematics.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Mathematics. Applicants must pay this fee by credit card.

Master of Science Degree in Mathematics

Students will be considered for acceptance into the M.S. degree program in mathematics if they have completed an undergraduate major in mathematics or a strong undergraduate minor in mathematics together with a major in a closely related discipline. Once accepted, the requirements are as follows:

1. The candidate must complete a total of at least 30 semester

hours of graduate credit approved by the Director of Graduate Studies of which 15 hours must be at the 500 level, only 3 of which can be for 595A-K or 599, and at least 21 hours must be in courses (exclusive of 411, 412, 511, 512A-G and 513A-I) offered by the department of Mathematics. A minor concentration may be taken outside of the department if approved by the Director of Graduate Studies during the student's first semester in the master's program.

2. The candidate's program must include: (a) Math 452 and Math 419 AND (b) at least one 400- or 500-level mathematics course from two of the following three areas: (1) algebra and analysis (excluding Math 452 and Math 419); (2) geometry and topology (3) probability and statistics. These requirements may be met in whole or in part by means of equivalent courses taken here or elsewhere prior to acceptance for graduate study in the department. Students who do not receive a B or better in Math 452 on the first attempt are required to repeat it. Students who do not receive a B or better in Math 419 on the first attempt are required to repeat it.
3. The candidate must prepare a research paper or thesis (3 hours credit in MATH 595 or 599) under the supervision of a research adviser and two other faculty members from the department. This committee will be appointed by the Director of Graduate Studies after consultation with all those involved.
4. The candidate must demonstrate competence with the research tool of computer programming. This research tool requirement will be met by passing with a grade of B or better in CS 202 or the equivalent, or by passing a suitable examination given by a faculty member from the Department of Mathematics who has been appointed by the Director of Graduate Studies.
5. The candidate must demonstrate satisfactory performance on a final oral examination covering the graduate course work and the research paper or thesis. This examination will be conducted by the 3 members of the candidate's committee and moderated by the research adviser. The student will pass the examination if the research adviser and at least 1 of the other 2 committee members so agree.

Master of Arts Degree in Mathematics

Students will be considered for acceptance into the M.A. degree program in mathematics if they have completed with distinction the equivalent of a strong undergraduate major in mathematics. Once accepted, the requirements are as follows:

1. The candidate must complete a total of 30 semester hours of graduate level mathematics courses of which at least 15 must be at the 500 level.
2. The candidate must complete with a grade of B or better each of the courses MATH 419, 421, 430, 452, 455, and at least 2 of the courses MATH 501, 519, 530. This requirement may be met in whole or in part by means of equivalent courses taken elsewhere.
3. The candidate must demonstrate the ability to read mathematical literature in French, German, or Russian.

This may be certified by passing with a grade of *B* or better the research tool course 488 offered by the Department of Foreign Languages and Literatures, by passing with a score of 465 or better an examination given by the Educational Testing Service of Princeton, NJ, or by passing a suitable examination given by a faculty member from the Department of Mathematics who has been approved by the Director of Graduate Studies.

4. The candidate must prepare a thesis (3 hours credit in MATH 599) under the supervision of a thesis adviser and 2 other faculty members from the department. This committee will be appointed by the Director of Graduate Studies after consultation with all those involved.

The candidate must demonstrate satisfactory performance on a final oral examination covering the graduate course work and the thesis. This examination will be given by the 3 members of the candidate's committee and chaired by the thesis adviser. The student will pass the examination if the thesis adviser and at least 1 of the other 2 committee members so agree.

Doctor of Philosophy Degree

Students will be considered for acceptance into the doctoral program if they have completed with distinction a graduate program comparable to that required for a master's degree in mathematics, statistics, or computer science at SIU. Additional evidence of outstanding scholarly ability or achievement (e.g., a high score on the advanced section of the Graduate Record Examination or published research papers of high quality) will lend strength to the application. Normally students will have completed 419, 421, 430, 452, and 455 or their equivalent before entering the doctoral program; those who have not must make up any deficiencies during their first year in the Ph.D. program. Once admitted, the requirements are as follows:

1. The candidate must pass the departmental qualifying examination within four regular semesters after admission. Qualifying examinations are given twice annually, in January and in August. The student will be allowed to take qualifying exams at most three times. A student who fails to pass the qualifying examination within the allotted time will be dropped from the doctoral program at the end of the semester. The qualifying exam consists of three parts, each covering a regularly scheduled 500 level MATH course. The student will decide which courses to be tested on in consultation with the Director of Graduate Studies. Two of the three must be chosen from 501, 519, 530 and 580, and must include either 501 or 519. All three parts must be passed, but not necessary all at once. One of the parts may be from a related field provided, if in judgement of the Graduate Programs Committee, it has mathematically rigorous content.
2. The candidate must demonstrate competence with a computer programming research tool. This requirement will be met by passing with a grade of *B* or better in CS 202 or its equivalent, or by passing a suitable examination given by a faculty member from the Department of Mathematics who has been appointed by the Director of Graduate Studies.
3. Mathematics 501 and 519 or their equivalent with a *B* or better are required courses for all doctoral students. The

candidate must complete a major area (12 hours) and two minor areas (6 hours each). The course work in the major and minor areas must be at the 500 level and must be exclusive of the courses used to satisfy the qualifying examination. Normally the major and minor areas will be based on courses currently taught in the department. However, one of the minor areas may be taken outside the department, subject to the approval of the Director of Graduate Studies. With regard to the major and two minor areas, at least one of the three must be in an applied area. The final definition of "applied" will be determined by the dissertation adviser. The following courses cannot be used to satisfy requirements of the PhD program: MATH 400, 401, 402, 403, 404, 411, 412, 511, 512A-G and 513A-I.

4. The candidate must file a request with the Director of Graduate Studies to appoint a dissertation committee to supervise the remaining doctoral work. This committee shall consist of 5 members with the candidate's dissertation adviser as chair. At least one member of the committee must represent each of the minor areas, and the dissertation adviser and one other member will represent the major area. One member of the committee will be chosen from outside of the department. This committee will be appointed by the Director of Graduate Studies after consultation with the candidate, the proposed dissertation adviser, the department chair, and the other faculty members involved.
 5. The candidate must pass a preliminary examination over the major area and one minor area chosen by the candidate. This examination will normally be given after satisfying the research tools requirement and within 18 months after passing the qualifying examination. The preliminary examination will consist of a written examination over the major area and an oral examination over the major area and the chosen minor area. This examination will be prepared, administered, and evaluated by the dissertation committee. Any member of the graduate faculty may attend the oral portion of the preliminary examination and (at the discretion of the committee chair) question the candidate. The candidate will pass the preliminary examination provided that 4 members of the committee including the chair so agree. A report on the examination will be included with the candidate's official academic records. In the event that the candidate's performance is unsatisfactory, the committee as a whole shall decide on the time and content of an appropriate re-examination. A candidate who fails the re-examination will be dropped from the doctoral program.
- In unusual circumstances a candidate who has passed the preliminary examination may wish to change the major area or dissertation adviser. This will be allowed if the Director of Graduate Studies and department Chair so agree, in which case the dissertation committee will be reconstituted in an appropriate manner. The revised committee may then prescribe additional course work and require the candidate to retake the preliminary examination.
6. The candidate must be officially admitted to candidacy for the Ph.D. degree. This will be done after all of the above requirements have been met.

7. The candidate must complete a dissertation (representing at least 24 hours in MATH 600) under the supervision of the candidate's dissertation adviser. The dissertation adviser and the other 4 members of the dissertation committee will evaluate the quality of the completed work which must conform to high literary and scholastic standards and constitute an original and publishable contribution to mathematics. A final oral examination will be conducted by the dissertation committee. During this examination the candidate will first present the major results of the dissertation and then respond to questions. Any member of the University graduate faculty may attend and (at the discretion of the dissertation adviser) ask related questions. The dissertation will be accepted provided the dissertation adviser and at least 3 of the other 4 members of the committee so agree.

For students interested in the doctoral degree program with an emphasis in computational mathematics, the entrance requirements are 419, 421, 452, and CS 451. Once students are admitted, the preceding paragraphs 1 through 7 apply except for the following. Courses for the qualifying exam are CS 555, one from 501 or 519, and one other 500 level mathematics course (preferably 549 or 575). For the preliminary examination, computer science should be a minor area. The program must also include mathematics 501, 519, and 549 or their equivalents.

As a matter of policy, the Department of Mathematics does not provide any student working for a master's degree financial support for more than two years nor a Ph.D. student more than four years past the master's or master's equivalent.

Courses (MATH)

400-4 Interest Theory and Financial Derivatives. This course examines financial mathematics and actuarial models for investments including interest, annuities, stocks, bonds, and mutual funds. There is an introduction to financial derivatives, options, and futures. Preparation for Exam FM/2. Prerequisite: MATH 250 (Calculus II) with *C* or better.

401-3 Life Contingencies I. This course examines actuarial models for life insurance. Life contingency models include life insurance liability calculations, annuities, and credit risk. Basic properties of survival models and Poisson processes are covered. This course and MATH 402 prepare students for Exam MLC/3L. Prerequisite: MATH 483 with *C* or better.

402-3 Life Contingencies II. This is a second course in actuarial models for life insurance including multiple contingencies, multiple survivals and claim frequency models. Basic properties of Markov Chains are covered. This course and MATH 401 prepare students for Exam MLC/3L. Prerequisites: MATH 221 and MATH 401 with *C* or better.

403-3 Loss Models I. This course examines loss models including severity models, ruin models, and estimating and fitting the models. This course and MATH 404 prepare students for Exam C/4. Prerequisite: MATH 483 with *C* or better.

404-3 Loss Models II. This is a second course in loss models including estimation and fitting of severity and ruin models, and credibility theory. This course and MATH 403 prepare students for Exam C/4. Prerequisite: MATH 403 with *C* or better.

405-3 Intermediate Differential Equations. This course features the study of several sets of differential equations with the aid of computers. The equations are actual applications in biology, chemistry, economics, engineering, finance, medicine, and physics. Where possible, problems will be chosen to match student's interests. Students from these areas are particularly welcome. Basic theory of differential equations is cited as needed. Prerequisite: Math 305 with *C* or better.

406-3 Linear Analysis. Introduction to function spaces and operators as used in quantum mechanics, partial differential equations, etc. Topics include: discrete and continuous models for the vibrating string; separation of variables and eigenfunction analysis; inner product spaces; operators on inner product spaces; the spectral theorem for Hermitian operators on finite dimensional spaces, the Courant-Fisher characterization. Prerequisite: Math 221 and 305 with *C* or better.

407-3 Partial Differential Equations. Solution methods for linear partial differential equations arising in engineering and science. Topics include: the heat equation, the wave equation, Laplace's equation, separation of variables, boundary and initial value problems, uniqueness via the energy methods, the maximum principle and characteristics. Solutions to the vibrating string and dissipation of heat in a bar will be discussed. Prerequisite: Math 251 and Math 305 with *C* or better.

409-3 Fourier Analysis. Introduction to the theory, techniques, and applications of Fourier analysis. Topics include: Fourier synthesis and analysis equations for periodic and aperiodic functions; convolution; the calculus of Fourier transforms, Fourier series and DFT's; operators and Fourier transforms; FFT and related algorithms; generalized functions such as Dirac's delta and others; selected applications. Prerequisite: Math 221 and 305 with *C* or better.

411-1 to 6 (1 to 3, 1 to 3) Mathematical Topics for Teachers. Variety of short courses in mathematical ideas useful in curriculum enrichment in elementary and secondary mathematics. May be repeated as topics vary. Does not count toward a mathematics major.

412-3 Problem Solving Approaches to Basic Mathematical Skills. Content of basic skills at all levels of education and the development of these skills from elementary school through college; emphasis on problem solving and problem solving techniques; determination of student skills and proficiency level. Credit may not be applied toward degree requirements in mathematics. Prerequisite: MATH 321 or CI 321.

417-3 Applied Matrix Theory. Selected applications of matrices to physics, chemistry and economics. This material is also useful for engineering and computer science. Topics will include matrix representation of symmetry groups, non-negative matrices and the subsidy problem, location of eigenvalues. Prerequisite: Math 221 with *C* or better.

418-3 Computer Algebra Systems. This course presents modern computer algebra systems (CAS) as a research tool in mathematics. The use of a CAS in the preparation of reports, theses and dissertations will also be covered. Topics will include: Solving differential equations with a CAS; Plotting techniques with a CAS; Symbolic packages for such areas as abstract algebra, number theory; and combinatorics: Programming with a CAS; Exporting result to TeX or word processing software; The AMS-LaTeX package. Restricted to graduate standing.

Special approval needed from the instructor.

419-3 Introduction to Abstract Algebra II. A detailed study of polynomial equations in one variable. Solvable groups and the Galois theory of field extensions are developed and applied to extensions of the quadratic formula, proving the impossibility of trisecting an angle with only a straight-edge and a compass, and to the basic facts about finite fields as needed in coding theory and computer science. Prerequisite: Math 319 with *C* or better.

421-3 Linear Algebra. The extension of basic linear algebra to arbitrary scalars. The theory and computation of Jordan forms of matrices (as needed, e.g., for certain diffusion equations). Inner products, quadratic forms and Sylvester's Law of Inertia. Prerequisite: Math 221 with *C* or better.

425-3 Introduction to Number Theory. Properties of integers, primes, divisibility, congruences, quadratic forms, diophantine equations, and other topics in number theory. Prerequisite: Math 319 with *C* or better.

430-3 Introduction to Topology. Study of the real line and the plane, metric spaces, topological spaces, compactness, connectedness, continuity, products, quotients and fixed point theorems. This course will be particularly useful to students who intend to study analysis or applied mathematics. Prerequisite: Math 352 with a *C* or better.

435-3 Elementary Differential Geometry. Introduction to modern differential geometry through the study of curves in \mathbb{R}^3 . Local curve theory with emphasis on the Serret-Frenet formulas; global curve theory including Fenchel's theorem; local surface theory motivated by curve theory; global surface theory including the Gauss-Bonnet theorem. Prerequisite: MATH 221 and MATH 251 with *C* or better.

447-3 Introduction to Graph Theory. (Same as CS 447) Graph theory is an area of mathematics which is fundamental to future problems such as computer security, parallel processing, the structure of the World Wide Web, traffic flow, and scheduling problems. It is also playing an increasingly important role within computer science. Topics covered include: trees, coverings, planarity, colorability, digraphs, depth-first and breadth-first searches. Prerequisite: Math 349 with *C* or better.

449-3 Introduction to Combinatorics. (Same as CS 449) This course will introduce the student to various basic topics in Combinatorics that are widely used throughout applicable mathematics. Possible topics include: elementary counting techniques, pigeonhole principle, multinomial principle, inclusion and exclusion, recurrence relations, generating functions, partitions, designs, graphs, finite geometry, codes and cryptography. Prerequisite: Math 349 with *C* or better.

450-3 Methods of Advanced Calculus. Multivariable calculus fundamental to continuum mechanics, differential geometry, electromagnetism, relativity, thermodynamics, etc. Includes: parametric curves and surfaces, the inverse and implicit function theorems, contraction mapping and fixed point theorems, differentials, convergence of multivariate integrals, coordinate systems in space, Jacobians, surfaces, volumes, and Green's, Gauss', and Stokes' theorems. Prerequisite: Math 251 with *C* or better.

452-3 Introduction to Analysis. A rigorous development of one-variable calculus providing the tools necessary for understanding all other advanced courses in analysis. Topics

include: sets, axioms for the real numbers, continuity, limits, differentiation, the Riemann integral, and infinite sequences and series of functions. Additional topics may include areas such as Riemann-Stieltjes integration or the analysis of multivariable functions. Prerequisite: MATH 352 with *C* or better.

455-3 Complex Analysis with Applications. Analysis of differentiable functions of a single complex variable. Introduces mathematical techniques used to analyze problems in the sciences and engineering that are inherently two dimensional. Topics include: the complex plane, analytic functions, the Cauchy-Riemann equations, line integrals, the Cauchy integral formula, Taylor and Laurent series, the residue theorem, conformal mappings, applications. Prerequisite: Math 251 with *C* or better.

460-3 Transformation Geometry. Geometry viewed as the study of properties invariant under the action of a group. Topics include collineations, isometries, Frieze groups, Leonardo's Theorem, the classification of isometries of Euclidean and hyperbolic geometries. Recommended elective for secondary education majors in mathematics. Prerequisite: MATH 319 with *C* or better.

471-3 Optimization Techniques. (Same as CS 471) Introduction to algorithms for finding extreme values of nonlinear multivariable functions with or without constraints. Topics include: convex sets and functions; the arithmetic-geometric mean inequality; Taylor's theorem for multivariable functions; positive definite, negative definite, and indefinite matrices; iterative methods for unconstrained optimization. Prerequisite: MATH 221 and 250 with *C* or better.

472-3 Linear Programming. (Same as CS 472) Introduction to finding extreme values of linear functionals subject to linear constraints. Topics include: recognition, formulation, and solution of real problems via the simplex algorithm; development of the simplex algorithm; artificial variables; the dual problem and the duality theorem; complementary slackness; sensitivity analysis; and selected applications of linear programming. Prerequisite: MATH 221 with *C* or better.

473-3 Reliability and Survival Models. Introduction to the statistical analysis of data on lifetimes, including hazard functions and failure distributions; estimation and hypothesis testing in life testing experiments with complete as well as censored data. Prerequisite: MATH 480 or MATH 483 with a *C* or better.

474-3 Time Series. An introduction to time series: AR, MA and ARIMA models; estimation, time series models. Prerequisite: MATH 480 or MATH 483 with *C* or better.

475-3 Numerical Analysis I. (Same as CS 475) Introduction to theory & techniques for computation with digital computers. Topics include: solution of nonlinear equations; interpolation and approximation; solution of systems of linear equations; numerical integration. Students will use MATLAB to study the numerical performance of the algorithms introduced in the course. Prerequisite: MATH 221 and MATH 250 with *C* or better.

476-3 Numerical Analysis II. (Same as CS 476) Continuation of MATH 475. Topics include: solution of ordinary differential equations; computation of eigenvalues and eigenvectors; and solution of partial differential equations. Students will use

MATLAB to study the numerical performance of algorithms introduced in the course. Prerequisites: Math 305 and Math 475 with *C* or better.

480-3 Probability, Stochastic Processes and Applications

I. Introduction to the central topics of modern probability including elementary stochastic processes; random variables and their properties; sum of independent random variables and the Central Limit Theorem; random walks; discrete-time finite state Markov chains; applications to random number generators and image and signal processing. Also generating functions, conditional probability, expectation, moments. Prerequisite: MATH 251 with *C* or better.

481-3 Probability, Stochastic Processes and Applications II.

Continuation of MATH 480. Thorough introduction to Markov processes and Martingales; including laws of large numbers, classification of states, recurrence, convergence to the stationary distribution in Markov chains, birth processes, Poisson processes, stopping times, and the Martingale convergence theorem. Important and current applications will be included. Prerequisite: MATH 480 with *C* or better.

483-4 Mathematical Statistics in Engineering and the Sciences.

Develops the basic statistical techniques used in applied fields like engineering, and the physical and natural sciences. Principal topics include probability; random variables; expectations; moment generating functions; transformations of random variables; point and interval estimation; tests of hypotheses. Applications include one-way classification data and chi-square tests for cross classified data. Prerequisite: Math 250 with *C* or better.

484-3 Applied Regression Analysis and Experimental Design.

Introduction to linear models and experimental design widely used in applied statistical work. Topics include linear models; analysis of variance; analysis of residuals; regression diagnostics; randomized blocks; Latin squares; factorial designs. Applications include response surface methodology and model building. Computations will require the use of a statistical package such as SAS. Prerequisite: MATH 221 and MATH 483 with *C* or better.

485-3 Applied Statistical Methods. Introduction to sampling methods and categorical data analysis widely used in applied areas such as social and biomedical sciences and business. Sampling methods topics include: simple random and stratified sampling; ratio and regression estimators. Categorical data analysis topics include: contingency tables; loglinear models; logistic regression; model selection; use of a computer package. Prerequisite: MATH 483 with *C* or better.

490-3 Topics in Mathematics. Selected topics in mathematics chosen from such areas as: (a) Financial Mathematics, Mathematical Biology or Actuarial Mathematics; (b) Probability, Statistics or Stochastic Processes; (c) Mathematical topics not including Statistics, such as Operations Research, Cryptography and High Dimensional computing in Numerical Analysis, etc. May be repeated up to 3 times as topics vary. Special approval needed from the instructor.

495-1 to 6 Special Topics in Mathematics. Individual study or small group discussions in special areas of interest under the direction of a member of the faculty. Special approval needed from the chair and instructor.

501-3 Measure and Integration. This course is an introduction

to measure theory and the Lebesgue integral. Its purpose is to develop many of the advanced mathematical tools that are necessary for the understanding of all other advanced courses in analysis. Topics will include: measures and measurable functions, Egoroff's theorem, the Lebesgue integral, Fatou's lemma, the monotone and dominated convergence theorems, functions of bounded variation and absolutely continuous functions, L_p -spaces, the Radon-Nikodým theorem, product measures, and Tonelli's and Fubini's theorems. Prerequisite: MATH 452.

502-3 Functional and Linear Analysis. This course is an introduction to infinite-dimensional spaces and their analysis. Topics include: Hilbert and Banach spaces, separable and reflexive spaces, operators and their adjoints, and major theorems such as the Banach-Steinhaus, Open-Mapping, Closed Graph, Hahn-Banach, Riesz and matrix representation, Lax-Milgram, Arzela-Ascoli, Katos theorems. Spectral theory and applications to such areas as differential equations, Block iterations, quantum probability, fixed point theory or other areas are covered as time permits. Prerequisite: MATH 501 with a grade of B or better.

505-3 Ordinary Differential Equations. Existence and uniqueness theorems; general properties of solutions; linear systems; geometric theory of nonlinear equations; stability; self-adjoint boundary value problems; oscillation theorems. Theory will be illustrated with computer simulation of several real-world problems. Prerequisite: 452 and 421 or consent of instructor.

506-1 to 12 Advanced Topics in Ordinary Differential Equations. Selected advanced topics in ordinary differential equations chosen from such areas as: stability, oscillations, functional differential equations, perturbations, boundary value problems. Special approval needed from the instructor.

507-3 Partial Differential Equations. This course introduces the student to the mathematical techniques that are used to analyze qualitative properties of solutions to partial differential equations that arise in engineering and the sciences. Topics studied will include: function spaces including Sobolev spaces; weak derivatives; the Sobolev and Poincaré inequalities; existence, uniqueness, and continuous dependence for model equations. Prerequisite: 407 and 501.

511-3 Advanced Topics in the Teaching of Mathematics. (Same as CI 529) Selected advanced topics in the teaching of mathematics chosen from such areas as: pedagogical theories; instructional strategies; applications of mathematics; problem solving. This course is counted by the Mathematics department only as part of an approved minor. Special approval needed from the instructor.

512-1 to 21 Topics in Mathematics for Teachers of Elementary, Middle School and Junior High Mathematics. (a) Abstract Algebra. (b) Geometry. (c) Probability and Statistics. (d) Sets, Logic and Number Systems. (e) Applications of Mathematics. (f) Algebra. (g) History of Mathematics. This course is counted by the Mathematics department only as part of an approved minor.

513-1 to 27 Topics in Mathematics for Teachers of Secondary Mathematics. (a) Abstract Algebra. (b) Geometry. (c) Probability and Statistics. (d) Sets, Logic and Number Systems. (e) Applications of Mathematics. (f) Analysis. (g) Discrete

Mathematics. **(h)** Topology. **(i)** Computer Simulation. This course is counted by the Mathematics department only as part of an approved minor.

516-8 (4,4) Statistical Analysis in the Social Sciences. **(a)** Descriptive statistics; graphic display of data; concepts of probability; statistical estimation, and hypothesis testing. Applications to social science data. **(b)** Matrix algebra; general linear model; multivariate statistics, ordinal and nominal measures of associations and causal modeling. Applications to social science data. This course does not give credit toward a mathematics major. Prerequisite: one year of high school algebra or equivalent.

519-3 Algebraic Structures I. Introduction to the basic techniques in the classification of finite groups, including homomorphism theorems, classification of finitely generated abelian groups, Sylow's theorems and classification of small groups, divisibility theory in rings, especially polynomial rings. Prerequisite: 419 or consent of instructor.

520-3 Algebraic Structures II. Free modules, torsion modules, finitely generated modules over principal ideal domains, application of abelian groups, algebraic geometry, homological algebra and group cohomology. Prerequisite: MATH 519.

522-1 to 12 Advanced Topics in Algebra and Number Theory. Selected topics in modern algebra and number theory chosen from such areas as: group theory, commutative algebra, non-commutative algebra, field theory, representation theory, analytical number theory, algebraic number theory, additive number theory. Diophantine approximations, Dirichlet series and automorphic form. Special approval needed from the instructor.

525-3 Analytic Number Theory. Introduction to modern analytic techniques used in the study of quadratic forms, the distribution of prime numbers, Diophantine approximations and other topics of classical number theory. Prerequisite: MATH 425 and MATH 419.

526-3 Algebraic Number Theory. Introduction to modern algebraic techniques used in the study of number theory. Advanced Galois Theory, algebraic integers, prime factorization of ideals, Dirichlet unit theorem, ramification theory, local fields, and other topics. Prerequisite: MATH 425 and MATH 455.

530-3 Topology. This course covers the basics of point-set topology, Urysohn's lemma, Tychonoff's theorem, the Baire category theorem, manifolds and the fundamental group. Prerequisite: 430 or 452 with a C or better.

531-3 Algebraic Topology. This course covers homotopy and homology groups, exact sequences, CW complexes, axioms of homology, and beginnings of cohomology. Prerequisite: 530 with C or better.

532-1 to 12 Topics in Geometry and Topology. Topics may include dynamical systems, topological groups, knot theory, complexity theory, uniform spaces and frames, differential and Riemannian geometry, voting theory and mathematical physics. Special approval needed from the instructor.

535-3 Differential Geometry. This course covers differential forms, curvature, connections, integration on manifolds and may include Riemannian geometry or Lie groups. Prerequisite: MATH 530 with a C or better.

540-3 Convex Analysis. The course develops the basic results

on convex sets and functions which are extensively used in several areas of applied mathematics and in business and engineering. Both finite and infinite dimensional spaces will be discussed. Topics covered include separation theorems, extreme points and the Krein-Milman Theorem. For infinite dimensional spaces elementary aspects of locally convex spaces will be covered. Applications include inequalities, constrained optimization and minimax theory. Prerequisite: 452 or consent of instructor.

549-3 Combinatorial Theory. This course will introduce the student to various advanced topics in Combinatorial theory that are basic to modern methods in applicable mathematics. Possible topics include: Enumeration, Polya-Burnside theory, DeBruijn sequences, Graph theory, Cayley's Theorem, Ramsey's Theorem, Hall's Theorem, Design Theory, Distinct representatives, Latin squares and Finite geometries. Prerequisite: 449 or consent of instructor.

553-1 to 12 Advanced Topics in Analysis and Functional Analysis. Advanced topics in analysis and functional analysis from such areas as: harmonic analysis, approximation theory, integration theory, advanced complex variables, topological vector spaces, operator theory, Banach algebras, distribution theory. Special approval needed from the instructor.

555-3 Complex Analysis. We review the field of complex numbers, differentiability, series convergence and the Cauchy integral formula for functions of a single complex variable. We go on to study the properties analytic, entire, meromorphic, and harmonic functions. We develop rigorous proofs of the Maximum modulus theorem, the Riemann mapping theorem, the residue theorem, and the Weierstrass factorization theorem and related results. If time permits the gamma and Riemann zeta functions are presented. Prerequisite: MATH 455.

559-1 to 12 Advanced Topics in Combinatorics. Selected advanced topics in combinatorics chosen from such areas as: graph theory; combinatorial designs; enumeration; random graphs; finite geometry; coding theory; cryptography; combinatorial algorithms. Special approval needed from the instructor.

566-3 Continuum Mechanics. This course will provide a rigorous development of the mechanics of solids and fluids. Topics will include: elements of tensor analysis; kinematics; balance of mass, linear momentum and angular momentum; the concept of stress; constitutive equations for fluid and solid bodies; and invariance of constitutive equations under a change in observer. Applications of continuum mechanics to the solution of problems in materials science will be included as time permits. Prerequisite: 450 or 452.

569-1 to 12 Advanced Topics in Applied Mathematics. Selected advanced topics in applied mathematics chosen from such areas as: continuum mechanics; electromagnetic theory; control theory; mathematical physics. Special approval needed from the instructor.

570-1 to 12 Advanced Topics in Optimization. Selected advanced topics in optimization and operations research chosen from such areas as: calculus of variations, optimal control theory, nonlinear programming, convex analysis, non-smooth analysis, new flows, advanced computer simulation, large scale linear programming. Special approval needed from the instructor.

572-1 to 12 Advanced Topics in Numerical Analysis. (Same as CS 572) Selected advanced topics in numerical analysis chosen from such areas as: approximation theory, spline theory; special functions; wavelets; numerical solution of initial value problems; numerical solution of boundary value problems; numerical linear algebra; numerical methods of optimization; and functional analytic methods. Special approval needed from the instructor.

574-3 Approximation Theory. A study of techniques for approximating functions by polynomials, trigonometric polynomials, polynomial splines, wavelets, etc. Topics include: existence, uniqueness and characterization of best approximations in normed linear spaces; projection methods for good approximation; the Weierstrass, Muntz-Szasz, and Stone-Weierstrass theorems; degree of approximation and the Jackson theorems; construction of optimal min-max and least squares approximation using rational functions, splines, wavelets. Students will use MATLAB to study the quality of various approximations developed in the course. Prerequisite: 452, 475, and one of 406, 421.

575-3 Matrix Computations. A practical introduction to modern numerical linear algebra. Topics include: vector and matrix norms; Householder, Givens and Gauss transforms; factorization methods for solving systems of linear equations with roundoff error analysis; QR and SVD methods for solving linear least squares problems; the QR algorithm for computing the eigenvalues of a matrix. Students will use MATLAB to study the algorithms developed in the course. Prerequisite: 475 and one of 406, 421.

580-3 Statistical Theory. The course gives a rigorous introduction to statistical inference. Topics covered include statistical models; sufficiency and completeness; Cramér-Rao bound; Rao-Blackwell theorem; best estimators; most powerful tests; likelihood ratio tests; elements of Bayes and minimax procedures. Prerequisite: 483 or 480.

581-3 Probability. A rigorous, measure-theoretic introduction to probability theory. Principal topics include general probability spaces, product spaces and product measures, random variables as measurable functions, distribution functions, conditional expectation, types of convergence, characteristic functions and the Central Limit theorem, tail events and 0-1 laws, the Borel-Cantelli lemma, and the weak and strong law of large numbers. Concurrent course in real variables, 501.

582-1 to 6 Advanced Topics in Probability. Selected advanced topics in probability chosen from such areas as: martingales, Markov processes, Brownian motion, infinitely divisible laws. Special approval needed from the instructor.

583-1 to 12 Advanced Topics in Statistics. Selected advanced topics in statistics chosen from such areas as: advanced linear models, advanced experimental design, multivariate statistical analysis, decision theory, advanced nonparametric theory. Special approval needed from the instructor.

584-3 Linear Models. This course examines the theory of linear models with applications to the analysis of variance and regression and to the design of experiments. Least squares estimation, and testing for full rank models are covered. Prerequisites: MATH 221 and MATH 484 with grades of C or better.

585-3 Multivariate Analysis. This course examines the

multivariate normal and elliptically contoured distributions, estimators of multivariate location and dispersion, Hotelling's T squared test, MANOVA, multivariate regression, principal component analysis, canonical correlation analysis, discriminant analysis, and clustering. Prerequisites: MATH 483 and MATH 221 with grades of C or better.

586-3 Statistical Computing and Learning. This course covers Statistical Computing and Learning, including supervised and unsupervised learning, statistical computations in software packages such as R and SAS loops, approximation of distribution functions, computation of maximum likelihood estimations, random number generation, bootstrap, Monte Carlo, permutation tests, and Bayesian techniques. Prerequisites: MATH 483 and MATH 221 with grades of C or better.

590-1 to 6 Contemporary Mathematics Research. Lectures on various mathematical topics of current research interest by members of the department and by distinguished visitors. Special approval needed from the instructor.

595-1 to 12 per topic Special Project. An individual project, including a written report. (a) Algebra. (b) Geometry. (c) Analysis. (d) Probability and Statistics. (e) Mathematics Education. (f) Logic and Foundations. (g) Topology. (h) Applied mathematics. (i) Differential Equations. (j) Number Theory (k) Combinatorics and Graph Theory. Graded *S/U* only. Special approval needed from the instructor.

599-1 to 6 Thesis. Minimum of three hours to be counted toward the Master of Arts degree.

600-1 to 30 (1 to 16 per semester) Dissertation. Minimum of 24 hours to be earned for the Doctor of Philosophy degree.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Mechanical Engineering

<http://www.me.engr.siu.edu/>
meep@engr.siu.edu

COLLEGE OF ENGINEERING

Graduate Faculty:

Abrate, Serge, Professor, Ph.D. Purdue University, 1983; 1995. Impact, penetration, structural dynamics, composites.

Agrawal, Om, Professor, Ph.D., University of Illinois-Chicago, 1984; 1985. Computer-aided analysis and design of rigid/flexible multibody systems, numerical analysis, finite element methods, and continuum mechanics, CAD/Simulation of mechanical systems, fractional derivatives and their applications.

Cooley, Christopher, Assistant Professor, Ph.D. The Ohio State University, 2012; 2014. The dynamics, vibration and stability of high-speed mechanical systems. The vibration of high-speed compliant gears used in aerospace applications.

Chai, Tan, Assistant Professor, Ph.D. The Ohio State University, 2013; 2015. Structural dynamics, vibrations of mechanical systems, acoustics, and signal processing.

Chen, Juh W., Professor, *Emeritus*, Ph.D., University of Illinois, 1959; 1965.

Chu, Tsuchin P., Professor, Ph.D., University of South Carolina, 1982; 1990. Non-destructive evaluation, biomedical engineering, FEA, carbon composites, CAD/CAM, machine vision, optical methods in experimental mechanics, image processing and analysis.

Don, Jarlen, Professor, Ph.D., Ohio State University, 1982; 1985. Materials creep and creep fatigue, surface phenomena, carbon-carbon composites, composite materials, friction materials.

Esmaceli, Asghar, Associate Professor, Ph.D., The University of Michigan, 1995; 2005 Large scale computations of multiphase flows, phase change phenomena, and electrohydrodynamics.

Farhang, Kambiz, Professor, Ph.D., Purdue University, 1989; 1990. CAD/CAM, controls, vibrations, kinematics, dynamics, control and stability of flexible and rigid-body mechanical, electromechanical, mechanical-drive systems; manufacturing processes and process control.

Filip, Peter, Professor, Ph.D., Technical University Ostrava, Czech Republic, 1989, D.Sc. Academy of Sciences, Prague 1999; 2004. Friction materials, biomaterials.

Hippo, Edwin J., Professor, *Emeritus*, Ph.D., Pennsylvania State University, 1977; 1984.

Jefferson, Thomas B., Professor, *Emeritus*, Ph.D., Purdue University, 1955; 1969.

Kent, Albert C., Professor, *Emeritus*, Ph.D., Kansas State University, 1968; 1966.

Koc, Rasit, Professor and *Chair*, Ph.D., Missouri University Science and Technology, 1989; 1994. Advanced Materials and composites processing and characterization.

Mathias, James A., Associate Professor, Ph.D., Ohio State University, 2001; 2003. Nanotechnology, microchannels, heat transfer, thermodynamics, energy utilization.

Mondal, Kanchan, Associate Professor, Ph.D., SIUC, 2001; 2006. Electrochemistry, energy from coal, catalysis, reactor systems and design.

Muchmore, Charles B., Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1969; 1966.

Nsofor, Emmanuel C., Associate Professor, Ph.D., Mississippi State University, 1993; 1999. Heat transfer, advanced energy system, computational fluid dynamics (CFD).

O'Brien, William S., Associate Professor, *Emeritus*, Ph.D., West Virginia University, 1972; 1973.

Orthwein, William C., Professor, *Emeritus*, Ph.D., University of Michigan, 1958; 1965.

Rajan, Suryanarayaniah, Professor, *Emeritus*, Ph.D., University of Illinois, 1970; 1977.

Suni, Ian I., Professor and *Director of the Materials Technology Center*, Ph.D., Harvard University, 1992; 2013. Application of electrochemistry and electrochemical engineering to technology advancement in thin film growth and dissolution, including both photovoltaic thin films and ULSI materials; electrochemical biosensors, including the use of electrochemical impedance spectroscopy (EIS) for detecting antibody-antigen recognition; and nanotechnology, including the use of nanoporous template materials for alternative energy development and biosensing.

Swisher, George M., Professor, *Emeritus*, Ph.D., Ohio State University, 1969; 1999.

Swisher, James H., Professor, *Emeritus*, Ph.D., Carnegie-Mellon, 1963; 1983.

Tempelmeyer, Kenneth E., Professor, *Emeritus*, Ph.D., University of Tennessee, 1969; 1979.

Weston, Alan J., Associate Professor, Ph.D., Southern Illinois University, 1991; 1986. Electrodeposition and doping of laser semiconductors, pedagogical uses of commercial game engines for engineering 3D visualization, electrochemical STM patterning of organic masks for UV VLSI applications.

Wiltowski, Tomasz, Professor and *Director of Advanced Coal and Energy Research Center*, Ph.D., Institute of Catalysis and Surface Chemistry, Cracow, Poland, 1982; 2003. Heterogeneous catalysis and its applications in energy processes, coal gasification, alternative energy sources, hydrogen production from coal, catalytic conversion of hydrocarbons and alcohols to hydrogen, fuel cells, nanomaterials synthesis and characterization.

Wittmer, Dale E., Professor, *Emeritus*, Ph.D., University of Illinois, 1980; 1986.

Wright, Maurice, Professor, *Emeritus*, Ph.D., University of Wales, United Kingdom, 1962; 1984.

Master of Science in Mechanical Engineering

Graduate work leading to the Master of Science degree in mechanical engineering is offered by the College of Engineering. The program is designed to provide advanced study in air pollution control, mechanical system dynamics and vibration, acoustics and signal processing, mass and heat transfer, coal conversion, electrochemical processes, thermal science, thermal systems design, solar systems design, chemical and biochemical processes, mechanical systems, computer-aided design, composite materials and ceramics and tribology.

Admission. Students seeking admission to the graduate program in mechanical engineering must meet the admission standards set by the Graduate School and have a bachelor's degree in engineering or its equivalent. A student whose undergraduate training is deficient may be required to take

coursework without graduate credit.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Mechanical Engineering. Applicants must pay this fee by credit card. The application form can be obtained from the Department.

Accelerated Master's Program

Mechanical Engineering students with senior standing and a GPA of 3.5 will be permitted to take up to six hours of graduate credit in Fall and Spring semesters. Outstanding junior students will be allowed to take one course for graduate credit. By doing so, students then pursuing their MSME degrees after completing their BSME degrees will have these graduate credits transferred toward their MSME degree so that they may be able to finish the degree requirements in a year or so. Students must complete a no fee Graduate School application and submit it to the department chair for approval. Students will be allowed to complete up to 12 hours of graduate credit before receiving their BSME.

Requirements. Each student majoring in mechanical engineering will develop a program of study with a graduate adviser and establish a graduate committee of at least three members at the earliest possible date. A student may with the approval of a graduate faculty committee and the department chair also take courses in other branches of engineering, or in areas of science and business, such as physics, geology, chemistry, mathematics, life science, administrative sciences, or computer science. A thesis committee of at least three members will approve the thesis and the comprehensive oral exam.

For a student who wishes to complete the requirements of the master's degree with a thesis, a minimum of thirty semester hours of acceptable graduate credit is required. Of this total, eighteen semester hours must be earned in the Department of Mechanical Engineering and Energy Processes. A minimum of 15 hours of coursework at the 500-level (excluding thesis) is required. Each candidate is also required to pass a comprehensive oral examination covering all of the student's graduate work including thesis.

If a student prefers the non-thesis option, a minimum of thirty-six semester hours of acceptable graduate credit is required. The student is expected to take at least twenty-one semester hours within the Department of Mechanical Engineering and Energy Processes including no more than three semester hours of the appropriate 592 course to be devoted to the preparation of a research paper. A minimum of 15 hours of coursework at the 500-level (excluding thesis) is required. In addition, each candidate is required to pass a written comprehensive examination. An oral presentation of the paper may be required.

Each non-thesis student will select a minimum of three engineering graduate faculty members to serve as a graduate committee, subject to the approval of the chair of the department. The committee must include at least one member from one of the other engineering departments and will:

1. approve the student's program of study,
2. approve the student's research paper topic,
3. approve the completed research paper, and
4. administer and approve the written comprehensive

examination.

Teaching or research assistantships and fellowships are available for qualified applicants. Additional information about the program, courses, assistantships, and fellowships may be obtained from the College of Engineering or the Department of Mechanical Engineering and Energy Processes.

Courses (ME)

Graduate work in the Department of Mechanical Engineering and Energy Processes is offered toward a concentration for the Master of Science degree in engineering. Safety glasses are required for some of the courses in this department. Four-hundred level courses in this department may be taken for graduate credit unless otherwise indicated in the course description.

400-3 Engineering Thermodynamics II. Combined first and second law analysis; Energy analysis; Analysis of power and refrigeration cycles. Detailed treatment of gas and vapor cycles including gas and steam cycles; Thermodynamics of combustion and reaction of mixtures; Introduction to thermodynamic property relations, chemical and phase equilibrium. Prerequisite: ME 300.

401-1 Thermal Measurements Laboratory. Study of basic measurements used in the thermal sciences. Calibration techniques for temperature and pressure sensors. Thermal measurements under transient and steady-state conditions. Applications include conduction, convection and radiation experiments. Uncertainty analysis. The handling and reduction of data. Prerequisite: ME 302.

405-3 Transportation Power Systems. Operation and performance of Otto, Diesel, Atkinson engines. Methods of engine testing, types of fuel and their combustion, exhaust gas analysis. Analysis of fuel cell types, their performance and limitations. Operation of electrical motors, capacitors, battery packs and their charging. Types, selection, and analysis of jet engines. Prerequisite: current enrollment in or completion of ME 400 with a minimum grade of C. .

406-3 Thermal Systems Design. Applications of the principles of engineering analysis to the design of thermal systems. Coordination of such systems as heat exchangers, air conditioners, cogeneration cooling towers, and furnaces. Emphasis is placed on application of basic principles of heat transfer and fluid mechanics. Prerequisite: ME 302.

408-3 Energy Conversion Systems. Principles of advanced energy conversion systems; nuclear power plants, combined cycles, magnetohydropower, cogeneration (electricity and process steam) and heat pumps. Constraints on design and use of energy conversion systems; energy resources, environmental effects and economics. Prerequisite: ME 400.

410-3 Applied Chemical Thermodynamics and Kinetics. Designed for students interested in chemical and environmental processes and materials science. Topics covered include application of the Second and Third Laws of Thermodynamics, solution theory, phase equilibria, sources and uses of thermodynamic data, classical reaction rate theory, kinetic mechanisms and the determination of rate-determining steps in chemical reactions. Prerequisite: CHEM 200, 201, ME 300 or consent of instructor.

415-3 Engineering Acoustics. Principles of engineering acoustics and their applications to passive and active noise control techniques. Laboratory experience demonstrates techniques for control and reduction of noise. Prerequisite: ME 436. Special approval needed from the instructor.

416-3 Air Pollution Control. An overview of problems in air pollution likely to influence the Mechanical Engineer. Engineering control theory, procedure and equipment related to control of particulate, gaseous, and toxic air emissions. Restricted to senior standing and College of Engineering or consent of instructor.

421-3 Pneumatic Hydraulic Engineering. Design principles of fluid power engineering. The behavior of fluids in a system. Analysis and design of hydraulic and pneumatics machinery and systems using fluid as a medium for transmission of power and control of motion. Analysis of steady state and dynamic behavior. Critical operations and analysis.

422-3 Applied Fluid Mechanics for Mechanical Engineers. Applications of fluid mechanics in internal and external flows. The mathematical basis for inviscid and viscous flows calculations is developed with application to pipe and duct flows; external flow about bodies; drag determination; turbomachinery; and reaction propulsion systems. Semester design project of a fluid mechanical system. Prerequisite: ME 300 and MATH 305, ENGR 370A or 370B concurrently.

423-3 Compressible Flows. Foundation of high speed fluid mechanics and thermodynamics. One-dimensional flow, isentropic flow, shock waves and nozzle and diffuser flows. Flow in ducts with friction and heat transfer. Prandtl-Meyer flow. Compressibility effects in reaction propulsion systems. Semester design project. Prerequisite: ME 300, ENGR 370A or 370 B concurrently.

435-3 Design of Mass Transfer Processes. Design principles of mass transfer processes. The rate mechanism of molecular, convective and interphase mass diffusion. The design of selected industrial mass transport process operations such as absorption, humidification, water cooling, drying and distillation. Prerequisite: ME 302.

436-3 Mechanical Engineering Controls. Analysis and design of controls for mechanical engineering systems: mechanical, electrical, thermal, fluid and combinations. Prerequisite: ENGR 261, ME 300, ENGR 335, 351.

440-3 Heating, Ventilating and Air Conditioning Systems Design. Principles of human thermal comfort. Heating and cooling load analysis. HVAC system design. Air conditioning processes. Prerequisite: ME 302.

446-3 Energy Management. Fundamentals and various levels of analysis for energy management of commercial buildings and industrial processes and buildings. Use of energy management systems and economic evaluations are required in course projects. Prerequisite: ME 302.

449-3 Mechanics of Advanced Materials. Mechanical behavior of composite materials, cellular materials, functionally graded materials. Constitutive equations for the linear and nonlinear ranges, failure theories, fracture mechanics. Application to the design of composite and sandwich structures, pressure vessels, shafts, armor under static loading, impact and blast loading. Prerequisite: ENGR 261, ENGR 350A or 350B

451-3 Advanced Dynamics. Three-dimensional kinematics and dynamics of

particles and rigid bodies; Coordinates and reference frames; Rotations of rigid bodies; Euler angles; Newtonian mechanics; Work and energy; Generalized coordinates and degrees of freedom; Analytical mechanics with a focus on Lagrange's equations; Hamilton's principle for continuous elastic systems. Prerequisites: MATH 305 and ME 309 with a grade of C or better or Graduate Standing.

463-3 Introduction to Ceramics. Structure and physical properties, mechanical properties, processing and design of ceramics. Prerequisite: ME 312 or equivalent.

465-3 Introduction to Nanotechnology. Survey of the rapidly developing fields of nanometer science and engineering. Impact on society; principles of self-assembly; production and properties of nano-materials; cell mechanism as a model for assemblers; nano-tools; and nano-systems are explored. Prerequisite: CHEM 210.

468-3 Friction Science and Applications. Study of systems and materials used for friction applications with a focus on aerospace and ground transportation vehicles. Course covers theories and experimental methods regarding friction and wear, contact mechanics, friction materials, vibration and noise, thermal transport and thermo-elastic phenomena. The course approach uses a materials emphasis. Lectures are complemented by exposure to laboratory methods and equipment. Design of a friction component, system or testing device. Prerequisite: ME 312. Restricted to senior standing or consent of instructor.

470-3 Mechanical System Vibrations. Linear vibration analysis of mechanical systems. Design of mechanical systems to include effects of vibration. Prerequisite: ENGR 261, ENGR 351, MATH 305.

472-3 Materials Selection for Design. Interaction of material design process with material selection criteria. Comparison of materials properties, processes and fabrication. Project work includes design models, material selection rationale, oral presentation of projects, construction of mock-up models, and theoretical design problems in the area of the student's specialization. Prerequisite: ENGR 222 or 296.

475-3 Machine Design I. Design of machines using bearings, belts, clutches, chains and brakes. Develops application of the theory of fatigue, power transmission and lubrication to the analysis and design of machine elements. Prerequisite: ENGR 351 and ENGR 350A or 350B concurrently.

477-3 Fundamentals of Computer-Aided Design and Manufacturing. Introduction to the concepts of computer-aided design and manufacturing (CAD/CAM). Subjects include computer graphics, geometric modeling, engineering analysis with FEM, design optimization, computer numerical controls, project planning and computer integrated manufacturing. (CIM). Students are required to use computer packages for projects. Prerequisite: ME 475 or consent of instructor.

478-3 Finite Element Analysis in CAD. Course to cover a multitude of topics in CAD/CAE with emphasis on finite element modeling and analysis. Overview of CAD/CAM/CAE; FEA software; FEA problems including trusses, beams, frames, thermal analysis, and fluid mechanics; design optimization; rapid prototyping. Students are required to use FEA software for homework assignments and a design project. Prerequisite: ME 302 and ME 475 or consent of instructor.

480-3 Computational Fluid Dynamics. Application of

computational fluid dynamics techniques to the solution of problems in engineering heat transfer and fluid flow. Discretization techniques; stability analysis. Introduction to grid generation. Prerequisite: ENGR 351, ENGR 370A or 370B concurrently, ME 302 or consent of instructor.

485-3 Cellular and Molecular Biomechanics. (Same as BME 485) Mechanics at the micron and nanoscale level relevant to living cells. Molecular forces, bond dynamics, force induced protein conformational changes. Structural basics of living cells; contractile forces; mechanics of the biomembranes, the nucleus, the cytoskeleton filaments- actin, microtubule, intermediate filaments. Active and passive rheology techniques; microrheological properties of the cytoskeleton. Active cellular processes such as cell adhesion, cell spreading, control of cell shape, and cell migration. Discussion on the experimental techniques including single molecule approaches to understand these key cellular processes. Discussion on theoretical models that predict these cellular processes and their limitations. Introduction to Mechanobiology. Prerequisites: ENGR 350A or 350B with a minimum grade of C or better, or graduate standing.

493-3 Materials in Energy Applications. Materials are central to every energy technology. The course will provide information on high performance materials for alternative energy technologies and developing a fundamental understanding of their structure-property-performance relationships. It will include materials for fuel cells, lithium ion batteries, supercapacitors, photovoltaics, solar energy conversion, thermoelectrics, and hydrogen production and storage, catalysts for fuel conversion. Prerequisite: ME 312.

500-3 Advanced Engineering Thermodynamics. Principles of kinetic theory and classical statistical mechanics applied to thermodynamic systems. Statistical interpretation of the equilibrium state and thermodynamic properties of engineering systems. Introduction to irreversible thermodynamics with engineering examples. Prerequisite: ME 300.

501-3 Transport Phenomena. Mechanism of heat, mass and momentum transport on both molecular and continuum basis. Estimation of transport properties. Generalized transport equations in one- or three-dimensional systems. Analogy of mass, heat and momentum transfer. Macroscopic balances, simultaneous mass and heat transfer. Prerequisite: ME 302.

502-3 Conduction Heat Transfer. Engineering considerations involving the construction of mathematical and numerical models of conduction heat transfer and the interpretation of results of analyses. Prerequisite: ME 302.

503-3 Convective Heat Transfer. Laminar and turbulent forced convection heat transfer over surfaces and inside tubes, including non-circular cross sections. Developing flows. Laminar free convection. Emphasis throughout is on the analytical approach. Prerequisite: ME 302.

504-3 X-Ray Diffraction and Electron Microscopy. (Same as PHYS 571A) X-ray physics. Geometry of crystals. Scattering of X-ray by atoms, crystals and noncrystalline matter. Kinematical theory of diffraction. Powder method, Laue method. Electron optics. Formation and analysis of diffraction patterns. Imaging techniques. Image contrast theories. Analysis of crystal defects. Advanced analytical electron microscopes.

505-3 Vehicle Dynamics. To provide an introductory coverage of dynamics of vehicle systems. The topics include mainly

automotive systems but others such as aircraft and train systems may be discussed. Students will become familiar with issues related to tire behavior, vehicle suspension design, steering, vehicle and load transfer. Prerequisite: ENGR 261.

507-3 Combustion Phenomena. Basic combustion phenomena-chemical rate processes-flame temperature, burning velocity, ignition energy, quenching distance and inflamability limits-laminar and turbulent flame propagation-aerodynamics of flame-gaseous detonations-two phase combustion phenomena-fluidized bed combustion. Prerequisite: ME 300.

508-3 Nano/Microscale Energy and Heat Transfer. Review of limitations of macroscopic energy transport models; Energy transport and conversion mechanisms at the micro/nano/molecular scale; Energy transfer in nanostructured energy devices; Related topics on the transport of electrons, phonons and molecules; Molecular Dynamics solution. Restricted to graduate standing or consent of instructor.

509-3 Thermal Radiation Heat Transfer. Review of radiation fundamentals. Prediction of radiative properties using classical electromagnetic theory. Properties of real materials. Governing equations between blackbody and graybody surfaces. Exchange of radiation between nondiffuse, nongray surfaces. Radiation in the presence of other energy transfer modes. Approximate and computer solution techniques. Prerequisite: ME 302.

525-3 Small Particle Phenomena. Small particle formation, behavior, properties, emission, collection, analysis and sampling. Includes atomization, combustion, transport of suspension and sols, filtration, light scattering and movement patterns of mono and polydisperse particles and use of a device to measure size, size distribution and one other physical property of an aerosol. Restricted to graduate standing.

531-3 Reaction Engineering and Rate Processes. Chemical kinetics of homogeneous and heterogeneous reactions, kinetic theories, mechanism and mathematical modeling. Reactor design. Design of multiple reactions; temperature and pressure effects. Nonisothermal and nonadiabatic processes. Non-ideal reactors. Prerequisite: ME 435.

535-3 Computer Aided Analysis of Mechanical Systems I. Computer aided kinematic and dynamic analysis of planar mechanism: topics will include formulation of kinematic and dynamic equations of motion for planar systems. Automatic generations of kinematic constraint such as resolute joint, translation joint, etc. Numerical techniques for solution of nonlinear, differential, and algebraic equations, application of these techniques to planar mechanism and robotic systems. Prerequisite: ME 309.

537-3 Nonlinear Vibrations. Dynamic response and stability of nonlinear systems. Examples and sources of nonlinearity. Various techniques for studying dynamic behavior or nonlinear systems. Prerequisite: ME 470 or consent of instructor.

538-3 Applied Optimal Design and Control of Dynamic Systems. Unconstrained and Constrained Mechanical-System Optimization Problems; Variational Calculus; Continuous Optimal Control; The Maximum Principle and Hamilton-Jacobi Theory; Dynamic-Systems Optimum-Control Examples; Design Sensitivity Analysis; Numerical Methods for Dynamic-System Design and Control Problems; Application of the above techniques to Large Scale Dynamic Systems. Prerequisite: ME 470 or equivalent.

539-3 Catalysis in Energy Processes. This course spans the full range from fundamentals of kinetics and heterogeneous catalysis via modern experimental and theoretical results of model studies to their equivalent large-scale energy processes. Several processes are discussed including hydrogen production, fuel cells, liquid fuel synthesis. Prerequisite: ME 410 or consent of instructor.

540-3 Introduction to Continuum Mechanics. Tensor analysis applied to continuum mechanics: stress and strain and their invariance, equations of compatibility, constitutive equations - including linear stress-strain relations. Prerequisite: ENGR 350A, MATH 305. Restricted to graduate standing in engineering.

545-3 Intelligent Control. Techniques to design and develop intelligent controllers for complex engineering systems. Specific techniques covered are fuzzy logic, expert systems, genetic algorithms, simulated annealing and any combinations of these. Prerequisite: ME 436 or consent of instructor.

549-3 Wave Propagation, Impact and Explosions. This course will deal with the dynamic response of materials and structures to dynamic events with particular emphasis on crashes, impacts and explosions. Prerequisite: ENGR 261 or consent of instructor.

550-3 Contact Mechanics. Course covers fundamentals of mechanics of elastic and inelastic solids in contact. Although the primary focus is on elastic contact, topics involving plastic flow, thermo-elastic effects and contact of rough surfaces are included in the content. Restricted to graduate standing.

551-3 Advanced Vibration. Analytical techniques for the vibration of discrete, continuous, and hybrid discrete-continuous systems; Vibrations of conservative and nonconservative systems with focus on their representation in terms of linear operations; Properties of vibrating systems; Discretization methods of the analysis of continuous and nonlinear systems; Vibration and stability of gyroscopic systems. Prerequisite: ME 470 with a grade of or better or Graduate Standing.

555-3 Materials Processing. Course to cover a multitude of topics in the processing of metals, ceramics and, to a lesser extent, polymers. Examples are: materials beneficiation, extraction, solidification, sintering and thin film deposition; topics for which the scientific basis for the processes is well established. Prerequisite: ME 312, 410 or consent of instructor.

562-3 Environmental Degradation of Materials. Course designed for majors in engineering and the physical sciences. Topics covered include general corrosion, oxidation, hydrogen embrittlement, stress corrosion cracking and fine particle erosion. Approach will draw on principles of chemistry and materials science. Prerequisite: CHEM 200 and 210, ME 312, or consent of instructor.

564-3 Ceramic Materials for Electronics. Ceramic materials contribute essential passive functions as components for a wide range of electronic applications related to sensors and energy converters. Ceramic material's electronic properties, electronic and ionic conduction in ceramic oxides; processing, properties and applications of ceramic materials for electronics, solid-oxide fuel cells, properties, fabrication and performance will be covered in this course. Prerequisite: ME 312, 463, or consent of instructor.

565-3 Finite Element Analysis. (Same as CE 551) Finite element analysis as a stress analysis or structural analysis tool. Derivation of element stiffness matrices by various means. Application to trusses, plane stress/strain and 3-D problems. Dynamic and

material nonlinearity problems. Prerequisite: ENGR 350A,B, ENGR 222A or B, and MATH 305.

566-3 Advanced Mechanics of Materials. (Same as CE 557) Advanced topics in mechanics of materials including: elasticity equations; torsion of non-circular sections; generalized bending including curved beams and elastic foundations; shear centers; failure criteria including yielding, fracture and fatigue; axisymmetric problems including both thick and thin walled bodies; contact stresses; and stress concentrations. Restricted to graduate standing in engineering or consent of instructor.

567-3 Tribology. Analysis and design of tribological components particularly bearings. A number of modern developments in the field and advanced topics will be presented. Restricted to graduate standing or consent of instructor.

568-3 Alternative Energy and Fuel Resources. The course covers the alternatives for energy resources and the impact of the human growth on the energy usage and its environmental consequences. The course describes the fossil fuel era, renewable energy resources, and hydrogen fuel era. The fundamentals of each of these fuel types, their conversion to usable energy and the potential of each of these fuels for the future is discussed. Prerequisite: ME 300 and 400, or instructor's consent.

569-3 Non-Destructive Evaluation. Course to cover a multitude of topics in non-destructive evaluation (NDE) techniques with emphasis on recent advancements in the field. Introduction to the field of NDE. Overview of common NDE techniques, such as visual inspection, eddy current, X-ray and ultrasonics. Recent development and research areas in NDE.

577-3 Bioprocess Engineering. (Same as BME 577) This course introduces the Mechanical and/or the Biomedical Engineer to the applications of bioprocesses to biotechnology, bacterial cell cultivation, animal cell cultivation, plant cell cultivation, and medical applications bioprocessing. Attention will be given to a short survey of the working cells and reactors for cell growth, but will be an overview in nature. Restricted to graduate standing.

580-1 to 2 Seminar. Presentations of topics in the broad areas of mechanical engineering such as thermal, mechanics, materials and acoustics. Restricted to enrollment in program leading to Master of Science of Mechanical Engineering.

582-1 Experimental Research Tools. Topics important to engineering graduate students engaging in research. These topics include: laboratory safety, statistical data analysis, experimental design, library research and chemical hygiene. Restricted to graduate enrollment in Engineering.

583-1 Technical Research Reporting. Analysis of technical and scientific writing: journal article, thesis, research paper. Guidelines and principles for writing engineering research literature and proposals. Term project involving thesis or research paper proposal to meet department requirements. Prerequisite: ME 582. Special approval needed from the instructor.

592-1 to 4 Special Investigations in Engineering. Advanced topics in thermal and environmental engineering. Topics are selected by mutual agreement of the student and instructor. Four hours maximum course credit. Special approval needed from instructor and department chair.

593-3 Special Topics in Mechanical Engineering. Studies of special topics in various areas in mechanical engineering. Such topics as coal refining, energy conversion, thermal systems, mechanics, robotics, CAD/CAM, TOM and engineering materials.

Special approval needed from the instructor.

595-3 Research Paper. Research paper on a topic approved by a faculty advisor and committee in Mechanical Engineering. This course is restricted to graduate students in the non-thesis option. Restricted to graduate standing in Mechanical Engineering. Special approval needed from the instructor or department.

599-1 to 6 Thesis. Six hours maximum course credit.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Medical Dosimetry

COLLEGE OF APPLIED SCIENCES AND ARTS

Graduate Faculty:

Collins, Kevin Scott, Professor, Ph.D., Southern Illinois University Carbondale, 2011.

Collins, Sandra K., Associate Professor, Ph.D., Southern Illinois University Carbondale, 2003; 2000. Health care management.

McKinnies, Richard, Associate Professor, M.S., Southern Illinois University Carbondale, 2000, 2003.

Mobile, Katherine, Lecturer, M.S., University of Wisconsin-LaCrosse, 2011.

Other related dosimetry courses taught by medical physicists on contract.

TRACK 1

Mission: The mission of the Medical Dosimetry Program offered by Southern Illinois University (SIU) is to provide a quality program integrating education, research and service in order to meet the needs of the profession and improve health care of the people and communities we serve.

Program Goals

1. Prepare the student to practice as a competent entry level professional Medical Dosimetrist by offering a comprehensive curriculum and quality didactic/clinical instruction.
2. Provide didactic and clinical experiences that lead to research in educational, professional, or health care issues relating to medical dosimetry.
3. Provide avenues to students for professional development and growth within the profession.
4. Provide avenues for students to develop and apply skills in effective communication necessary for successful medical dosimetry practice.
5. Provide avenues for students to develop and apply skills in critical thinking and problem-solving necessary for successful medical dosimetry practice.
6. Provide a clinical and didactic environment which leads to the development of clinical skills and competence appropriate to an entry level Medical Dosimetrist.

Program Description

The Medical Dosimetrist is a member of the Allied Health and Radiation Oncology Team.

Course material and practicum covers radiation physics, radiation protection, dose calculations, tumor localization, external beam treatment planning, brachytherapy, quality assurance, medical imaging/anatomy, clinical radiation oncology, and radiobiology. Clinical practicum includes external beam treatment planning, brachytherapy treatment, preparation and planning, chart reviews and dose calculations, record and verify system data entry, simulation (conventional and CT-simulation), treatment aid fabrication, treatment machine quality assurance, stereotactic treatment planning,

gamma knife, IMRT planning and treatment. Special project assignments, conference attendance, written reports, chapter reviews, and labs are also part of the curriculum.

Accreditation

The Medical Dosimetry Program is fully accredited through the Joint Review Committee on Education in Radiologic Technology (JRCERT). The program at SIU was the third accredited program in the United States. www.jrcert.org.

The program meets the formal education eligibility criteria for the national certification exam following graduation, as required by the Medical Dosimetry Certification Board. www.mdcb.org.

General Description of a Medical Dosimetrist

The Certified Medical Dosimetrist (CMD) is a member of the radiation oncology (cancer treatment) team who has knowledge of the overall characteristics and clinical relevance of radiation oncology treatment machines and equipment, is cognizant of procedures commonly used in brachytherapy (treatment with radioactive sources at a close distance) and has the education and expertise necessary to generate radiation dose distributions and dose calculations in collaboration with the Medical Physicist and Radiation Oncologist.

Major Duties

- Design a treatment plan by means of computer and/or manual computation that will deliver a prescribed radiation dose and field placement technique in accordance with the Radiation Oncologist's prescription to a defined tumor volume.
- Consider dose-limiting structures in the design of treatment plans and document dose in accordance with the Radiation Oncologist's prescription
- Coordinate treatment simulations and tumor localization on dedicated devices, including Computerized Tomography (CT), Magnetic Resonance Imaging (MRI), and Positron Emission Tomography (PET) when indicated, for radiation oncology treatment planning.
- Supervise, perform, or assist in the planning of the fabrication of compensation filters, custom shields, wedges, and other beam modifying devices.
- Supervise, perform, or assist in the planning of the production of moulds, casts, and other immobilization devices.
- Supervise therapy staff in the implementation of the treatment plan including: the correct use of immobilization devices, compensators, wedges, field arrangement, and other treatment variables.
- Perform calculations for the accurate delivery of the Radiation Oncologist's prescribed dose, document all pertinent information in the patient record, and verify the mathematical accuracy of all calculations using a system established by the Medical Physicist.
- Provide physics and technical support to the Medical Physicist, in radiation protection, qualitative machine calibrations, and quality assurance of the radiation

oncology equipment.

- Supervise, perform, or assist in the application of specific methods of dosimetry including ion chamber, TLD, or film measurement as directed by the Medical Physicist.
- Assist in intracavitary and interstitial brachytherapy procedures and in the subsequent manual and/or computer calculation of the dose distributions of these treatments.
- Teach applied aspects of medical dosimetry to students and residents, as assigned.
- Participate in clinical research for the development and implementation of new techniques.
- Participate in continuing education in the area of current treatment planning techniques, and advances in medical dosimetry.

Source: www.medicaldosimetry.org

Eligibility for the Master of Science Program in Medical Dosimetry Track 1

Preferred candidates are individuals who have a baccalaureate degree and have been trained as a radiation therapist.

Consideration is given to applicants with a bachelor's degree in the physical or biological sciences without radiation therapy experience.

Number of Students

Due to clinical hour requirements and the number of clinical sites, approximately 20 students per year will be allowed at this time.

Application

Applications should be received by February 1st of the year one plans to attend the program. Class selection will occur in February/March. Two separate applications are required: One for the program and one for the Graduate School.

For more information about admission policies, transfer credit, tuition and fees, refund policies, academic calendars, academic policies, graduation requirements, and student services please review "Degree Requirements, found in Chapter 1, of in the Graduate Catalog <http://gradschool.siu.edu/about-us/grad-catalog/index.html>.

Class Location

The program offers education at various clinic sites and didactic education is delivered via distance learning. Live video conferencing equipment is used to allow students to interact with the instructors in real time.

Expenses

- Tuition: Current In-State Graduate Level Tuition and applicable Distance Education Fees.
- Textbooks and Lab Coat: Approximately \$500 - \$600
- Living Expenses: Students must find housing on their own. This can vary greatly.
- A Computer, Scanner, and High Speed Internet will be required. Computer and bandwidth specifications will be shared once accepted into the program.

Curriculum

The total curriculum consists of 30 semester hours. Program length is 52 weeks and the students attend classes/clinical for 40 hours per week.

Didactic component is approximately 300-350 hours. Clinical component is approximately 1650 - 1700 hours. The student will have approximately 2000 hours of education per year and have 80 hours of vacation.

Fall Semester

RAD 510-2	Simulation and Cross Sectional Anatomy in Medical Dosimetry
RAD 515-4	Medical Dosimetry Clinical I
RAD 520-3	The Physics of Medical Dosimetry I
RAD 525-3	Seminars in Medical Dosimetry I
Total: 12 hours	

Spring Semester

RAD 530-2	The Essentials of Medical Dosimetry
RAD 535-4	Medical Dosimetry Clinical II
RAD 540-3	The Physics of Medical Dosimetry II
RAD 545-3	Seminar in Medical Dosimetry II
Total: 12 hours	

Summer Semester

RAD 550-2	Medical Dosimetry Clinical III
RAD 555-2	The Physics of medical Dosimetry III
RAD 560-2	Seminar in Medical Dosimetry III
RAD 565-1 to 6	Independent Study
Total: 6-12 hours	

Program Director Contact Information:

Scott Collins, PhD, R.T.(R)(T), CMD, Ph.D.
 Medical Dosimetry Program Director
 Radiologic Sciences Program Director
 School of Allied Health, MC 6615
 College of Applied Sciences and Arts
 Southern Illinois University Carbondale
 Carbondale, Illinois 62901
 Office: 618-453-8800
 Fax: 618-453-7020

Disclaimer

Content of the program materials is subject to change without notice.

TRACK 2

Program Goals

1. Provide didactic experiences that lead to research in educational, professional, or health care issues relating to medical dosimetry.
2. Provide avenues to students for professional development and growth within the profession.
3. Provide avenues for students to develop and apply skills in effective communication, analytical and critical thinking and problem-solving necessary for successful medical dosimetry practice.
4. Provide a didactic environment which leads to the development managerial/educational skills appropriate to a Medical Dosimetrist.

Program Description

The Medical Dosimetrist is a member of the Allied Health and Radiation Oncology Team

Course material covers radiation physics, radiation protection, dose calculations, tumor localization, external beam treatment planning, brachytherapy, quality assurance, medical imaging/anatomy, clinical radiation oncology, and radiobiology. Special project assignments, journal article reports, and chapter reviews as well as management and education courses are also part of the curriculum.

Accreditation:

The Medical Dosimetry Program is approved by the Illinois Board of Higher Education (IBHE) and The Higher Learning Commission of the North Central Association of Colleges and Schools.

General Description of a Medical Dosimetrist

The Certified Medical Dosimetrist (CMD) is a member of the radiation oncology (cancer treatment) team who has knowledge of the overall characteristics and clinical relevance of radiation oncology treatment machines and equipment, is cognizant of procedures commonly used in brachytherapy (treatment with radioactive sources at a close distance) and has the education and expertise necessary to generate radiation dose distributions and dose calculations in collaboration with the Medical Physicist and Radiation Oncologist.

Major Duties

Design a treatment plan by means of computer and/or manual computation that will deliver a prescribed radiation dose and field placement technique in accordance with the Radiation Oncologist's prescription to a defined tumor volume.

Consider dose-limiting structures in the design of treatment plans and document dose in accordance with the Radiation Oncologist's prescription.

Coordinate treatment simulations and tumor localization on dedicated devices, including Computerized Tomography (CT), Magnetic Resonance Imaging (MRI), and Positron Emission Tomography (PET) when indicated, for radiation oncology treatment planning.

Supervise, perform, or assist in the planning of the fabrication of compensation filters, custom shields, wedges, and other beam modifying devices.

Supervise, perform, or assist in the planning of the production of moulds, casts, and other immobilization devices

Supervise therapy staff in the implementation of the treatment plan including: the correct use of immobilization devices, compensators, wedges, field arrangement, and other treatment variables.

Perform calculations for the accurate delivery of the Radiation Oncologist's prescribed dose, document all pertinent information in the patient record, and verify the mathematical accuracy of all calculations using a system established by the Medical Physicist.

Provide physics and technical support to the Medical Physicist, in radiation protection, qualitative machine calibrations, and quality assurance of the radiation oncology equipment.

Supervise, perform, or assist in the application of specific methods of dosimetry including ion chamber, TLD, or film

measurement as directed by the Medical Physicist.

Assist in intracavitary and interstitial brachytherapy procedures and in the subsequent manual and/or computer calculation of the dose distributions of these treatments.

Teach applied aspects of medical dosimetry to students and residents, as assigned.

Participate in clinical research for the development and implementation of new techniques.

Participate in continuing education in the area of current treatment planning techniques, and advances in medical dosimetry.

Source: www.medicaldosimetry.org

Eligibility for the Master of Science Program in Medical Dosimetry Track 2

Applicants must be a Certified Medical Dosimetrist and be current with the Medical Dosimetry Certification Board (MDCB). These individuals must also have a baccalaureate degree from an accredited university. The baccalaureate degree and academic performance must meet the entrance requirements set forth by the Graduate School at SIU.

Individuals that have been approved by the MDCB to take their exam may apply to the program but CMD verification must be documented before any classes may be taken.

Number of Students

There is no limit to the number of students accepted for Track 2.

Application

Continuous enrollment is allowed for Track 2. This means you may start the program with any semester. Two separate applications are required: One for the program and one for the Graduate School.

For more information about admission policies, transfer credit, tuition and fees, refund policies, academic calendars, academic policies, graduation requirements, and student services please review the Graduate Catalog at: <http://gradschool.siu.edu/about-us/grad-catalog/index.html>.

Class Location

Track 2 is offered via distance learning.

Expenses

- Tuition: Current In-State Graduate Level Tuition and applicable Distance Education Fees.
- Living Expenses: Students must find housing on their own. This can vary greatly.
- A Computer, Scanner, and High Speed Internet will be required. Computer and bandwidth specifications will be shared once enrolled.

Curriculum

The total curriculum consists of 30 semester hours. Students may enroll only part time for this program.

Suggested Course Sequence for Track Two Students:

Fall Semester

RAD 511-3	Fundamentals of Health Care Systems - Odd Years
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RAD 516-3	Cultural Foundations and Theories of Education - Odd Years
RAD 520-3	The Physics of Medical Dosimetry I - Even Years
RAD 525-3	Seminars in Medical Dosimetry I - Even Years

Spring Semester

RAD 531-3	Human Resource Management in Health Care - Odd Years
RAD 536-3	Introduction to Administration and Supervision in Allied Health - Odd Years
RAD 540-3	The Physics of Medical Dosimetry II - Even Years
RAD 545-3	Seminar in Medical Dosimetry II - Even Years

Summer Semester

RAD 551-3	Legal and Ethical Fundamentals of Health Care - Even Years
RAD 556-3	Individual Research in Medical Dosimetry - Odd Years

Program Director Contact Information

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Courses (RAD)

510-2 Simulation and Cross Sectional Anatomy in Medical Dosimetry. This course covers the conventional and CT simulation techniques used in initiating radiation therapy for cancer patients. Identification of cross-sectional anatomy at different anatomical locations within the human body is also reviewed. This course is twenty weeks in length. Restricted to admission to the Medical Dosimetry Program.

511-3 Fundamentals of Health Care Systems. This course provides a multi-disciplinary analysis and is designed to provide students with information pertaining to the issues surrounding access to care, medical technology, and the complex financial structures of the health care system. Students will extensively examine aspects of the complex healthcare system such as managed care, Medicare, Medicaid, pharmaceuticals, health promotion and disease prevention, and the quality of care.

515-4 Medical Dosimetry Clinical I. This is the first course of a three course sequence. During the three course sequence, students will complete eight clinical rotations including Brachytherapy, Simulation, Gamma Knife, Treatment Aids, IMRT, External Beam, Physics, Special Measurements and QA. The length of these rotations varies from one to eleven weeks.

During this course students will perform two to four of these rotations depending on the rotation schedule. While in the clinical setting students will observe and work directly with a medical dosimetrist. Emphasis is given on learning and understanding the role and responsibilities of a medical dosimetrist in the clinical setting. This course is twenty weeks in length. Restricted to the Medical Dosimetry Program.

516-3 Cultural Foundations and Theories of Education. Seminar provides an examination of the historical, social, economic and psychological foundations of allied health education with emphasis given to the nature and role of education and training in preparing for the field of medical education. The objectives of this seminar will allow the student to explore the nature and theories of education, the behavioral aspects of education including the assumptions and practices which underlie education. Special approval needed from the instructor

520-3 The Physics of Medical Dosimetry I. This course covers the following topics: Radiologic Physics, production of x-rays, radiation treatment and simulation machines, interactions of ionizing radiation, radiation measurements, dose calculations, computerized treatment planning, dose calculation algorithms, electron beam characteristics, and brachytherapy physics and procedures. This course is twenty weeks in length. Restricted to admission to the Medical Dosimetry Program.

525-3 Seminars in Medical Dosimetry I. (Same as RAD 526) This course consists of various seminars/literature reviews associated with radiation oncology. Topics include treatment techniques for various cancers, technological advances in cancer treatment, cancer treatment trends, and the role of a medical dosimetrist. This course is twenty weeks in length. Restricted to admission to the Medical Dosimetry Program.

530-2 The Essentials of Medical Dosimetry. This course covers the various quality assurance procedures performed in a radiation oncology department. Also included are various statistics topics to educate the student in becoming a good consumer of medical dosimetry research literature. Professional development, billing/coding, HIPAA, and professional service are also addressed. This course is twenty weeks in length. Prerequisite: A grade of C or better in RAD 510, 515, 520, and 525.

531-3 Human Resources in Health Care. Describes the key human resource functions that play a significant role in the healthcare environment and focuses specifically on how those functions support management initiatives and accreditation and/or regulatory compliance. Extensive review of how the failure to systematically apply effective human resource strategies can result in organizational demise is conducted. Conduct a human resource audit. Explores the dynamic legal and regulatory environment and carefully examines how legislative changes influence the healthcare organization overall focusing particularly on those functions that are linked to patient satisfaction and balanced scorecards and/or benchmarking of provider performance.

535-4 Medical Dosimetry Clinical II. This is the second of a three course sequence. During the three course sequence, students will complete eight clinical rotations including Brachytherapy, Simulation, Gamma Knife, Treatment Aids, IMRT, External Beam, Physics, Special Measurements and QA. The length of these rotations varies from one to eleven weeks. During this course students will perform two to four of these rotations depending on the rotation schedule. While in the clinical setting

students will observe and work directly with a medical dosimetrist. Emphasis is given on learning and understanding the role and responsibilities of a medical dosimetrist in the clinical setting. This course is twenty weeks in length. Prerequisite: A grade of C or better in RAD 515.

536-3 Administration and Supervision in Allied Health. This course provides students with an examination of the nature, function, and techniques of administration and supervision in medical departments. This is accomplished through case analyses and practice simulations of human problems in the healthcare organization and application of findings of behavioral science research to healthcare problems. Emphasis will be placed on the development of direction and leadership skills.

540-3 The Physics of Medical Dosimetry II. This course covers the following topics: Imaging for radiation Oncology, IMRT, stereotactic radiosurgery, special procedures, particle therapy, hyperthermia, and radiation safety. This course is twenty weeks in length.

545-3 Seminars in Medical Dosimetry II. (Same as RAD 546) This course consists of various seminars associated with radiation oncology. Topics include treatment techniques for various cancers, technological advances in cancer treatment, cancer treatment trends, and the role of a medical dosimetrist. This course is twenty weeks in length.

550-2 Medical Dosimetry Clinical III. This is the third course of a three course sequence. During the three course sequence, students will complete eight clinical rotations including Brachytherapy, Simulation, Gamma Knife, Treatment Aids, IMRT, External Beam, Physics, Special Measurements and QA. The length of these rotations varies from one to eleven weeks. During this course students will perform two to four of these rotations depending on the rotation schedule. While in the clinical setting students will observe and work directly with a medical dosimetrist. Emphasis is given on learning and understanding the role and responsibilities of a medical dosimetrist in the clinical setting. This course is twenty weeks in length. Prerequisite: A grade of C or better in RAD 535.

551-3 Legal and Ethical Fundamentals of Health Care. This course provides students with an analysis of the legal and ethical environment of the healthcare industry. Focused on the healthcare environment, the course examines the judicial process pertaining to torts, contracts, antitrust, corporate compliance, access to care, negligence, and professional liability. The nature of ethics in the multi-cultural healthcare environment is examined with an analysis of the moral issues in healthcare. Restricted to Medical Dosimetry students.

555-2 The Physics of Medical Dosimetry III. This course covers the following topics: MU calculations, point dose calculations and radiation biology. This course is ten weeks in length. Prerequisite: A grade of C or better in RAD 540.

556-3 Individual Research in Healthcare. This course requires students to complete a research project in the field of healthcare based upon student interest and instructor approval. Each project will have a written paper as a final product and this paper will be submitted for publication, as approved by the instructor, in one of the professional journals within the field of healthcare. Restricted to Medical Dosimetry.

560-2 Seminar in Medical Dosimetry III. This course consists of various seminars/literature reviews associated with radiation

oncology. Topics include treatment techniques for various cancers, technological advances in cancer treatment, cancer treatment trends, and the role of a medical dosimetrist. This course is ten weeks in length. Prerequisite: A grade of C or better in RAD 545.

565-1 to 6 Independent Study. Directed independent study in selected areas of medical dosimetry studies. Special approval needed from the Program Director.

601-1 Continuing Enrollment. This course is required to satisfy the Graduate School's requirement of continuous enrollment and is intended for those students who are enrolled in the program but cannot take a core academic course during a given semester. Prerequisite: Consent of Program Director.

Mining Engineering

<http://www.engr.siu.edu/mining>
mining@siu.edu

COLLEGE OF ENGINEERING

Graduate Faculty:

Chugh, Yoginder P., Professor, *Emeritus*, Ph.D., Pennsylvania State University, 1971; 1977. Coal combustion byproduct utilization and management, rock mechanics, ground control, coal mining dust control and production engineering in coal mines.

Harpalani, Satya, Professor, Ph.D., University of California, Berkeley, 1985; 2002. Mine ventilation, coal bed methane reservoir engineering, in situ mining, and carbon dioxide sequestration.

Mohanty, Manoj, Professor, Ph.D., Southern Illinois University Carbondale, 1997; 2000. Coal and mineral processing, experimental design and statistical analysis.

Paul, Bradley, Associate Professor, *Emeritus*, Ph.D., University of Utah, 1989; 1990. Underground mining systems and solution mining, minerals processing, hard rock and industrial minerals, geostatistics, mine environmental studies.

Sinha, Atmesh K., Professor, *Emeritus*, Ph.D., University of Sheffield, England, 1963; 1975

Spearing, A.J.S. (Sam), Associate Professor, *Emeritus*, Ph.D., Technical University of Silesia, 1993; 2007. Mine design, rock mechanics, backfill, strata control and risk assessment.

Master of Science in Mining Engineering

Graduate work leading to the Master of Science degree in mining engineering is offered by the College of Engineering. The program is designed to provide advanced study in areas such as rock mechanics and ground control, mine design, mineral and coal processing, surface and underground mining systems performance optimization, innovative mining systems, surface mine reclamation, in-situ mining, mine environment and ventilation, coalbed methane reservoir engineering, carbon dioxide sequestration, dust control, and coal combustion byproduct utilization and management.

Admission

Students seeking admission to the graduate program in mining engineering must meet the admission standards set by the Graduate School and have a bachelor's degree in engineering or its equivalent. A student whose undergraduate training is deficient may be required to take coursework without graduate credit.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Mining Engineering. Applicants must pay this fee by credit card.

Requirements

A graduate student in mining engineering is required to develop a program of study with a graduate adviser and a graduate committee. Each student majoring in mining engineering may, with the approval of the graduate committee, also take courses in other branches of engineering or in areas of science and business. For a student who wishes to complete the

requirements of the master's degree with a thesis, a minimum of thirty semester hours of acceptable graduate credit is required. Of this total, eighteen semester hours must be earned in the mining engineering department. Each candidate is also required to pass a comprehensive oral examination covering all of the student's graduate work including thesis. A minimum of 15 hours must be earned in courses numbered 500 or above.

If a student prefers the non-thesis option, a minimum of 36 semester hours of acceptable graduate credit is required. The student is expected to take at least 21 semester hours within mining engineering including no more than 3 semester hours of the appropriate 592 course to be devoted to the preparation of a research paper. In addition, each candidate is required to pass a written comprehensive examination and an oral examination on the research paper.

If a student with a mining engineering background pursues a master's degree with double major, he or she will be required to take a minimum of 18 credits with thesis option and 22 credits with non-thesis option in mining engineering and 60% of the total credit requirements of the other department. For a student without a background in the related fields such as minerals engineering, geological engineering etc., the minimum credit requirement in the mining department will be 24 credits with thesis option and 28 credits with non-thesis option. Additional deficiency courses will be prescribed for students with a background in non-related fields.

Each student will select a minimum of three graduate faculty members to serve as a graduate committee, subject to the approval of the chair of the Department of MMRE. At least two of the committee members must be from the mining engineering department. The committee will:

1. approve the student's program of study,
2. approve the student's research topic,
3. approve the completed research paper or thesis, and
4. administer and approve the written, or oral, comprehensive examination.

Teaching or research assistantships and fellowships are available for qualified applicants. Assistantship and fellowship support is limited to two years in line with the Department's expectations of student's time to graduate. An extension of one semester is approved only under exceptional circumstances (eg: equipment failures). Additional information about the program, courses, assistantships, and fellowships may be obtained from the College of Engineering or the Department of Mining and Mineral Resources Engineering.

Courses (MNGE)

401-1 Mining Environmental Impacts and Permits. Socio-economic impacts of mining industry. Analyzing the markets for coal and its products. Mining operations and related environmental impacts. Mining permits. Prerequisite: 270 or consent of instructor.

417-3 Statistics, Probability, and Modeling. Basic concepts of probability and statistics, analysis of engineering data, fitting data to distribution functions. Modeling of engineering systems and optimization. Project management techniques and system stimulation.

420-4 Mineral and Coal Processing. Principles of processing minerals, aggregates and coal, including unit operations of comminution, classification, solid-solid separation, dewatering and tailings disposal. Laboratory investigations of the fundamental principles governing unit operations including size reduction, mineral liberation, classification, mineral recovery, and dewatering. Laboratory. Prerequisite: MNGE 270, CHEM 200, PHYS 205A, concurrent enrollment in or completion of ENGR 370A or 370B or consent of instructor.

421-3 Mineral Processing Plant Design. Engineering design of unit operations used for minerals, aggregates and coal processing including crushing, grinding, industrial screening, classification, gravity separation, flotation and dewatering. Overall plant performance optimization and flow sheet design. Prerequisite: MNGE 417 or concurrent enrollment and MNGE 420. Special approval needed from the instructor.

425-4 Mine Ventilation Systems Analysis and Design. Thermodynamic principles in mine ventilation. Study of the theories and practice of natural and forced mine ventilation. Fan and mine characteristics. Ventilation network analysis. Mine ventilation design and problem analysis. Laboratory. Prerequisite: MNGE 320 and ENGR 370A or 370B, or consent of instructor.

430-3 Economics of Mineral Resources. Investment decision making criteria; economic viability of mining projects, financing mining projects; sensitivity and risk analyses. Prerequisite: MNGE 270, or consent of instructor.

431-4 Rock Mechanics: Principles and Design. Analysis of stress and strain, elementary elasticity, stress distribution around openings, engineering properties of rocks, artificial support and reinforcement, slope stability. Laboratory. Prerequisite: Engineering 350A or 350B. Special approval needed from the instructor for graduate students and non-majors.

435-3 Application of Operations Research to Mining. Mine systems analysis, operations research and statistics in decision making, production engineering, optimization, linear programming, simulation. Prerequisite: 270, knowledge of linear algebra, or consent of instructor.

440-3 Material Handling Systems. Analysis and design of material handling systems such as belt conveying, hoisting and pumping. Mine power systems design. AC and DC motor applications. Material handling systems economics. Prerequisite: MNGE 310 or 315 with a minimum grade of C, or consent of instructor.

450-3 Industrial Minerals. Mining, Processing and Utilization aspects of key industrial minerals with special emphasis on the aggregates industry. Prerequisite: 270, 420 or consent of instructor.

455-3 Mine Environment, Health and Safety Engineering. Analysis of mine environmental impacts and their mitigation, safety problems and rules and regulations, hazards and accidents. Sealing and recovery of mines. Design of mine emergency plans, safety methods, and health hazard control plans. Acid mine drainage, minerals waste disposal environmental remediation. Prerequisite: 310, 315, consent of instructor. Mining industrial experience will be accepted lieu of prerequisites.

460-3 Senior Design. Projects in planning and design of

surface and underground mining systems. Evaluate and design mining subsystems; integrate subsystems and procedures into a preliminary mine design; and optimize operations from exploration to closure. Two lectures and two two-hour laboratories per week. Prerequisite: MNGE 420, 425, 431, 440 or consent of instructor.

475-3 Analysis and Design of Mine Excavations. Rock classification; design of shafts, slopes, tunnels and underground chambers; support requirements; design of slopes; design of underground mining systems from ground control point of view; design of impoundments. Prerequisite: MNGE 310, 315, and 431. Special approval needed from the instructor for graduate students and non-majors.

511-3 Advanced Ground Control. Ground control in viscoelastic, plastic, and jointed rocks, artificial rock stabilization, in-situ stresses, minimizing structural damage due to subsidence, bumps and rock bursts. Prerequisite: MNGE 431 or consent of instructor.

519-2 Advanced Mine Environment and Pollution Control. Study of the design of coal dust control plan; methane control. Design of mine illumination system, noise control and water pollution control. Prerequisite: MNGE 310 and MNGE 315.

521-3 Mineral Processing Design and Simulation. Mineral processing related unit process design, modeling and simulation of selected processes, complete plant flowsheet development and optimization of plant performance; modeling and simulation experience through multiple class projects. Prerequisite: MNGE 420, MNGE 421 or concurrent enrollment or consent of instructor.

530-3 Mine Management. Concepts of probability and statistics, analysis of engineering data, fitting data to distribution function. Modeling of engineering systems and optimization using linear programming, project management principles and system simulation.

535-3 Rock Fragmentation. Principles of rock fragmentation, cutting and drilling, mechanics of rock penetration, drillability indices, use of explosives in rock fragmentation, design of blasting patterns in surface and underground mines, prevention of airblast and noise due to blasting, chemical fragmentation. Prerequisite: MNGE 431 or consent of instructor.

540-3 Production Engineering in Coal Mines. Operations analyses of production cycles in surface and underground coal mining systems, mine planning and design using computer models, computer simulation, economic analysis of mining systems. Prerequisite: MNGE 435 or consent of instructor.

545-3 The Design, Analysis, Monitoring and Support of Underground Excavations. Tunneling thru consolidated and unconsolidated material including cut and cover, drilling and blasting and rapid excavation techniques. Classification and hydrogeologic systems. The design of tunnel liners and support and instrumentation and modeling. Mining majors need MNGE 431 or equivalent or consent of instructor. Some knowledge of rock mechanics, strength of materials and analysis is needed for non-majors. Student cannot get credit for MNGE 475 and MNGE 545, graduate students only.

550-3 Industrial Minerals. (Same as MNGE 450) Processing of key industrial minerals including Kaolin Clay, Talc, Mica, Carbonates and Aggregates. Ultra fine grinding and surface property based separation processes. Mining and Utilization

aspects. Prerequisite: MNGE 270, MNGE 420, MNGE 421 or consent of instructor.

580-1 Seminar. Research presentations and discussion with peer audience.

592-1 to 5 Special Investigations. Self based study under the supervision of a Mining Engineering Department Faculty.

599-1 to 6 Thesis.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Molecular Biology, Microbiology, and Biochemistry

<http://mbmb.siu.edu/>

mbmb@siu.edu

COLLEGE OF SCIENCE/SCHOOL OF MEDICINE

Graduate Faculty:

Achenbach, Laurie, Professor and *Dean*, College of Science, Ph.D., University of Illinois, Urbana-Champaign 1988; 1990. Molecular genetics of metabolic pathways involved in the bioremediation of environmental contaminants; bacterial diversity and evolution; molecular anaerobic microbiology.

Bartholomew, Blaine, Professor, *Emeritus*, Ph.D., University of California, Davis; 1988; 1991. Regulation of gene expression, chromatin structure and function, molecular mechanisms of cancer.

Bartke, Andrzej, Professor, *Emeritus*, Ph.D., (Springfield), University of Kansas, 1965; 1984. Genetic control of aging in mammals and endocrine mechanisms responsible for the effects of longevity genes.

Bender, Kelly, Associate Professor, Ph.D., Southern Illinois University, 2003; 2006. Metabolic regulation of bacteria involved in bioremediation; small non-coding regulatory RNAs.

Bhaumik, Sukesh R., Associate Professor, Ph.D., Tata Institute of Fundamental Research (University of Bombay), 1997; 2003. Regulation of eukaryotic gene expression; transcription-coupled ubiquitination and DNA repair; NMR structural studies on proteins and nucleic acids.

Braundmeier-Fleming, Andrea, Assistant Professor, Ph.D., (Springfield), 2005; 2014. Immune cell function and influence on the GI and vaginal microbiome and their implication in reproductive disorders.

Cao, Deliang, Associate Professor, M.D., Ph.D., (Springfield), Institute of Molecular Biology (University of Hong Kong), 1996; 2005. Molecular oncology and experimental therapeutics, with focuses on 1) action mechanisms and modulations of anticancer therapeutic agents and 2) the role of aldo-ketoreductases in cancer development, progression and therapy.

Clark, David P., Professor, *Emeritus*, Ph.D., University of Bristol, 1977; 1980.

Cooper, Morris D., Professor, *Emeritus*, Ph.D., (Springfield), University of Georgia, 1971; 1973.

Davie, Judy, Associate Professor, and *Director*, MBMB, Ph.D., University of California at Berkeley, 1998; 2006. Mechanisms of gene regulation, focusing on myogenin, a transcription factor that controls skeletal muscle development.

El-Amin, Saadiq Farid, Assistant Professor, M.D., Ph.D., (Springfield) Drexel University School of Medicine, 2009; 2010. Molecular signaling and gene evaluation of novel tissue engineered matrices for bone regeneration.

Elble, Randolph C., Associate Professor, Ph.D., (Springfield), Indiana University, 1986; 2005. Tumor suppression mechanisms in breast cancer. Biology of CLCA family proteins. Gene regulation in differentiation and stress.

Fisher, Derek, Assistant Professor, Ph.D., University of Pittsburgh School of Medicine, 2006; 2012. Developmental regulation in *Chlamydia*.

Fix, Douglas F., Associate Professor and *Chair*, Microbiology, Ph.D., Indiana University, 1983; 1987. Molecular mechanisms of mutagenesis in *Escherichia coli*.

Gagnon, Keith T., Assistant Professor, Ph.D., North Carolina State University, 2007; 2014. Biochemistry of nucleic acids, RNA and RNA-protein interactions in human biology and disease.

Gershburg, Edward, Associate Professor, Ph.D., (Springfield), Tel-Aviv University, 1999; 2007. Epstein-Barr virus (EBV)-encoded protein kinase in viral infection. EBV-PK regulation and enzymology and identification of its viral and cellular targets.

Gupta, Ramesh, Professor and *Chair*, Biochemistry and Molecular Biology, Ph.D., University of Illinois, 1981; 1984. Molecular biology of Archaea, transcription and RNA processing in extreme halophilic and hyperthermophilic microorganisms.

Haddock, John D., Associate Professor, *Emeritus*, Ph.D., Virginia Polytechnic Institute and State University, 1990; 1995.

Halford, William, Associate Professor, Ph.D., (Springfield), Louisiana State University Medical Center, 1996; 2007. Using herpes simplex virus as a tool to understand how viral and host immune factors interact to produce life-long viral infections; devising effective cures for persistent viral infections.

Hamilton-Brehm, Scott D., Assistant Professor, Ph.D., University of Georgia, 2008; 2016. Microbial characterization of unique extreme environments, characterization of novel metabolism pathways, and DNA investigations from ancient artifacts.

Hardwicke, Peter M. D., Professor, *Emeritus*, Ph.D., Kings College, London, 1969; 1985. Regulation of calcium transport across membranes by calcium pumps and the sodium-calcium exchanger. Proteolipids, lipids, conjugated trienes and non-myeelin sensory nerve antigens.

Huang, Mei Chris, Associate Professor, M.D., Ph.D. (Springfield) 2006, University of Tennessee College of Medicine (1999); Washington University School of Medicine (2002); Inflammatory bowel disease, colitis, and colorectal cancer, mechanisms of tumorigenesis.

Huvos, Pirooska, Research Assistant Professor, Ph.D. Eotvos Lorand University, Budapest, 1969; 1987. Genome rearrangements.

Kadyrov, Farid, Associate Professor, Ph.D., Russian Academy of Sciences, 1997; 2008. DNA replication and repair, DNA damage in cancer.

Konjufca, Vjolca, Assistant Professor, Ph.D., University of Arkansas, Fayetteville, 2002; 2010. Immunology, host-pathogen interactions.

Madigan, Michael T., Professor and Distinguished Scholar, *Emeritus*, Ph.D., University of Wisconsin, 1976; 1979.

Martinko, John M., Associate Professor and Distinguished Teacher, *Emeritus*, Ph.D., SUNY (Buffalo), 1978; 1981.

Nie, Daotai, Professor, Ph.D., (Springfield), University of South Carolina, 1997; 2005. Molecular and cellular biology of cancer; tumor metastasis; development of tumor therapeutics.

Niederhoffer, Eric C., Associate Professor, Ph.D., Texas A&M University, 1983; 1990. Metallobiochemistry; electron transfer; metalloprotein structure-function, microbial stress responses-virulence factors.

Olson, Michael, Assistant Professor, Ph.D., (Springfield), 2009; 2014. Characterization of the biology of *Staphylococcus Aureus* at the host interface.

Parker, Jack, Professor, *Emeritus*, Ph.D., Purdue University, 1973; 1977.

Rader, Bethany, Assistant Professor, Ph.D., University of Oregon, 2006; 2014. Beneficial host-microbe interactions, innate immunology, microbial ecology and systems biology.

Ran, Sophia, Professor, Ph.D. (Springfield), Weizmann Institute of Science, 1989; 2003. Tumor physiology, angiogenesis and lymphangiogenesis; breast cancer metastasis.

Rao, Krishna, Associate Professor, M.D., Ph.D., (Springfield), University of Washington, 2002; University of Miami, 1991; 2007. Role of Rab25 as a tumor suppressor, treatment of head and neck cancer.

Schmit, Joseph C., Associate Professor, *Emeritus*, Ph.D., Purdue University, 1971; 1976.

Tischkau, Shelly A., Associate Professor, Ph.D., (Springfield), University of Illinois, Urbana-Champaign, 1995; 2007. Neuroendocrinology; environmental toxicology; regulation of molecular circadian rhythms in health and disease states, including cancer and diabetes.

Torry, Donald S., Professor and *Chair of Medical Microbiology, Immunology and Cell Biology*, Ph.D., (Springfield), Southern Illinois University, 1989; 2000. Human reproductive biology; cellular biology of angiogenic growth factors and immune cytokines during pregnancy. Molecular biology of placental gene expression.

Weilbaeher, Rodney, Research Assistant Professor, Ph.D., University of California, Berkeley, 1997; 2007. Gene regulation, post-translational modifications, telomere biology.

Wilber, Andrew, Assistant Professor and *Director of Public Health Laboratory Sciences Program*, Ph.D., (Springfield) University of Minnesota, 2006; 2008. Gene therapy for hemoglobin disorders beta-thalassemia and sickle cell anemia, gene expression regulation, stable gene delivery using non-viral and viral integrating vector systems and cancer immunotherapy.

Yuan, Rong, Assistant Professor, M.D., Ph.D., (Springfield), Shanghai Second Medical University, P.R. China, 2000; 2012. Using genetic and bioinformatic methods to identify genetic mechanisms that regulate female sexual maturation and aging.

Graduate programs are offered that lead to the Doctor of Philosophy (Ph.D.) and Master of Science (M.S.) in Molecular Biology, Microbiology and Biochemistry. The M.S. degree has thesis and non-thesis options. The non-thesis option M.S. degree has an area of specialization in Public Health Laboratory Sciences. These interdisciplinary programs draw their faculty primarily from the Department of Microbiology (College of Science) and the Department of Biochemistry and Molecular Biology (School of Medicine) on the Carbondale campus, and the Department of Medical Microbiology, Immunology, and Cell Biology (School of Medicine) on the Springfield campus. Adjunct faculty from the Illinois Department of Public Health (IDPH) Division of Laboratories provide training to students in the public health laboratory setting. The programs are designed to offer advanced training (via lecture, discussion and laboratory) in biochemistry, biophysics, bacteriology, genetics, immunology,

microbial physiology, virology, mycology, molecular biology, cell biology, developmental biology, structural biology and public health laboratory science. The Ph.D. and thesis option M.S. programs require laboratory research. The non-thesis option M.S. degree program is designed to prepare students for a career in public health laboratory science and requires substantial training in a public health laboratory setting that is directly relevant to career preparation in that area.

Admission

Prospective graduate students should have an undergraduate degree in any of the biological, chemical or physical sciences. The applicants are recommended to have completed courses in biology, organic chemistry, physics and mathematics. Strong candidates with deficiencies in any area may be admitted, but such deficiencies may restrict the research areas available to the student and may lead to requirements for additional courses during graduate study. An advisory system in the program (see below) will help students in planning their course of study. Prospective students for the thesis option M.S. and Ph.D. degrees are encouraged to contact program faculty in areas of their research interest. Prospective students seeking admission to the non-thesis option M.S. degree program with an area of concentration in public health laboratory science are encouraged to contact the Chair of the Public Health Science Program committee.

Students may be admitted to the doctoral program with a bachelor's or master's degree. Students in the thesis option M.S. program can be admitted to the doctoral program via accelerated entry or the master's equivalency option by the recommendation of the faculty and approval of the Graduate School.

All application materials should be submitted to the Program Director. This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Molecular Biology, Microbiology and Biochemistry. Applicants must pay this fee by credit card. Applications for admission to the thesis option M.S. and Ph.D. programs are evaluated by the M.S./Ph.D. Program Admissions Committee and applications for the non-thesis option M.S. degree program with an area of concentration in public health laboratory science are evaluated by the Public Health Science Program Committee. Upon recommendation of the appropriate committee, the application is transmitted to the Graduate School for approval.

The MBMB program requires a grade point average (GPA) of 2.7 ($A = 4.0$) for admission into the M.S. programs and a GPA of 3.00 in graduate level work for admission into the doctoral program. An excellent record in undergraduate coursework and a strong recommendation of the thesis option M.S./Ph.D. Program Admissions Committee is required for direct admission to the doctoral program after a bachelor's degree.

Applicants are required to submit Graduate Record Examination (GRE) general test scores. Submission of test scores of the GRE advanced (biochemistry, cell and molecular biology or biology or chemistry) examinations is also encouraged.

International students whose native language is not English will be required to obtain at least 550 (paper score), 213 (computer score) or IBT of 80 on the Test of English as a

Foreign Language (TOEFL) or 6.5 on the International English Language Testing System (IELTS).

Financial Assistance

Fellowships and assistantships are available through the program and the participating departments for qualified applicants.

Advisement and General Requirements

For thesis option M.S. and Ph.D. students, the Program Director or the Departmental Graduate Advisors as designates will assist each incoming student with the initial planning of a program of study and will advise the student until a Research Director is chosen. For non-thesis option M.S. degree program students, the Public Health Science Program Committee or its Chair will assist students in the planning of a program of study.

Research Director and Graduate Committee Selection.

Each student in the Ph.D. or thesis option M.S. program should select a Research Director as soon as possible during the first year. The graduate committee for thesis option M.S. students shall consist of the Research Director (chair), and two additional graduate faculty members. The graduate committee for Ph.D. students shall consist of at least five graduate faculty members to include the Research Director (committee chair), three members derived from participating departments and one member from outside the Program. The Program Director, if not otherwise appointed, is an ex-officio (non-voting) member of every graduate committee. Students in the non-thesis option M.S. degree program with an area of concentration in public health laboratory science program need not choose a Research Director or a Graduate Committee and the Public Health Science Program Committee will plan and monitor student progress through the non-thesis option M.S. program.

Graduate Committee Functions (thesis option M.S. and Ph.D. students only). The graduate committee will:

1. plan and approve the student's program of study.
2. review the student's progress in courses and suggest and approve changes in the program of study.
3. evaluate the student's progress in research and make appropriate recommendations.
4. meet and determine, on a yearly basis whether a student is making satisfactory progress and may continue toward a degree. If continuation is denied, the committee must notify the Program Director, in writing, of the reasons for this denial.
5. administer written and oral preliminary examinations to the doctoral student.
6. read and evaluate the student's thesis or dissertation.
7. conduct the required oral examinations.

Public Health Laboratory Science Program Committee (non-thesis M.S. students only). The Public Health Laboratory Science Program Committee is composed of a Chair and a single member chosen from each of the three departments participating in the MBMB program. The Public Health Laboratory Science Program Committee will:

1. Provide programmatic oversight of the structure, curricular

design, content and personnel involved in the non-thesis option M.S. program.

2. Review applications from students for admission to the non-thesis option M.S. program and make admissions recommendations to the MBMB Program Director.
3. Advise non-thesis option M.S. students in planning a course of study.
4. Monitor student progress toward the non-thesis option M.S. degree.

Formal Course Requirements. All course requirements of the MBMB degree programs and Graduate School are minimum requirements. Additional courses may be required by the student's graduate committee (thesis option M.S. and Ph.D. students) or the Public Health Laboratory Science Program Committee (non-thesis option M.S. students) to meet any deficiencies or to provide proficiency in a specialized area. Certain courses are required of all students, while others meet the requirements of individual student's area of specialization, as determined by the student's graduate committee (thesis option M.S. and Ph.D. students). The Program Director, with the advice of the student's graduate committee or the Public Health Laboratory Science Program Committee may designate other courses within or outside of the Program to fulfill formal course requirements. Any course (or its equivalent) that meets the requirements of the Molecular Biology, Microbiology and Biochemistry graduate program whether taken at SIU or at any other institution before admission to the Program need not be repeated. Course equivalency will be determined by the Program Director in consultation with the appropriate committee or member of the faculty.

The formal core course requirements for both the thesis option M.S. and Ph.D. degree can be met by taking either MBMB 451A,B, and 460; or their equivalent. All M.S. and Ph.D. students must take either MBMB 502, Introduction to Research, or MBMB 504, Research Methods, and must also take during each semester in residence 1 hour of MBMB 597, Seminar and Professional Training.

Thesis option M.S. students must take two courses and the doctoral students must take three courses from a list of approved courses for specialization. Only one 400 level course from this list can be used to meet this requirement. Currently this list consists of MBMB 403, 405, 421, 423, 425, 441, 453, 455, 456, 470, 477, 520, 530, 531, 532, 533, 543, 551, 552, 553, 560, and 562. These courses are selected with the approval of the student's graduate committee, Research Director or the Departmental Graduate Advisor. In addition, M.S. students are also required to earn at least 8 hours in research and thesis credit (MBMB 515, 598 and 599; a minimum of 3 and maximum of 6 hours for MBMB 599), prepare a thesis on the research project and pass a final oral examination, which serves as the comprehensive examination.

The formal course requirements for non-thesis option M.S. students with an area of specialization in public health laboratory sciences can be met by taking MBMB 403 or 405, 453 or 455, 451a, 451b, CHEM 431, MBMB 460, 510, 540, 541a and 541b. Non-thesis option M.S. students must also take 1 hour of MBMB 597 (Seminar and Professional Training) during

each semester in residence. The Public Health Laboratory Science Program Committee will make recommendations to the Program Director whether courses taken at SIU or other universities are equivalent to the program requirements.

Preliminary Examination and Dissertation for the Ph.D. Degree. Each student in the doctoral program must pass a preliminary examination and meet the Graduate School residency requirement before being advanced to candidacy. The students can take the preliminary examination after completing the formal course requirements.

The student's graduate committee will prepare and administer a written preliminary examination covering various areas of molecular biology, microbiology and biochemistry, with particular emphasis in the area of concentration declared. This declaration will be done by means of a prospectus of a dissertation composed of (1) a proposal for the dissertation research, (2) biographical information on the candidate, and (3) a list of the courses taken during the candidate's graduate program. The proposal should address the proposed graduate research project, and be written in the NIH (National Institutes of Health) or NSF (National Science Foundation) approved format. The prospectus shall be available to the committee members at least 14 days prior to the date of the examination.

A written examination score of at least 80% is required before a student can proceed to the oral portion of the preliminary examination. Upon satisfactory completion of the written examination, the candidate will meet with the committee as a whole and discuss the prospectus in detail. The committee will then conduct an oral preliminary examination. At this time, the committee may ask in-depth questions about the research project and other areas of molecular biology, microbiology and biochemistry. At least 4 of the 5 committee members must judge the oral performance acceptable for a student to pass the preliminary examination overall. In the event that either the written or oral preliminary examination is failed, a student may request only one re-examination.

Successful completion of both written and oral examinations is required before a student can be advanced to candidacy for the Ph.D. After admission to candidacy, the student must earn at least 24 dissertation credit hours (MBMB 600), prepare and defend a dissertation, and present a public seminar based on the student's research.

Courses (MBMB)

403-3 Medical Microbiology Lecture. (Same as MICR 403) A survey of the more common bacterial, mycotic and viral infections of humans with particular emphasis on the distinctive properties, pathogenic mechanisms, epidemiology, immunology, diagnosis and control of disease-causing microorganisms. Three hours lecture. Spring semester. Prerequisite: Microbiology 301; or consent of instructor.

405-3 Clinical Microbiology. (Same as MICR 405) *This course will be offered in Springfield only.* A comprehensive course for health science professionals covering the biology, virulence mechanisms and identification of infectious agents important in human disease and host-defense mechanisms. Clinical applications emphasized. Three hours lecture. Prerequisite: Microbiology 301; or consent of instructor.

421-3 Biotechnology. (Same as MICR 421) Topics covered will include the genetic basis of the revolution in biotechnology, medical applications including genetic screening and therapeutic agents, industrial biotechnology and fermentation, and agricultural applications. Three hours lecture. Fall semester. Prerequisite: Microbiology 302; or consent of instructor.

423-3 Geomicrobiology. (Same as MICR 423 and GEOL 423) The course will focus on the role that microorganisms play in fundamental geological processes. Topics will include an outline of the present understanding of microbial involvement of weathering of rocks, formation and transformation of soils and sediments, and genesis and degradation of minerals. Elemental cycles will also be covered with emphasis on the inter-relationships between the various geochemical cycles and the microbial trophic groups involved. Prerequisite: Microbiology 301 and CHEM 210 and 211. Recommended: GEOL 220, 221, or 222.

425-3 Biochemistry and Physiology of Microorganisms Lecture. (Same as MICR 425) Chemical composition, cellular structure, and metabolism of microorganisms. Fall semester. Prerequisite: CHEM 340 or CHEM 339.

441-3 Viruses and Disease. (Same as MICR 441) An intensive, lecture-based course in virology which will emphasize principles of molecular virology, the ubiquity of viruses in nature, evolutionary relationships between viruses, co-evolution between virus and host, and the pathogenic consequences of some viral infections (e.g., AIDS, hepatitis, cancer, etc.). Prerequisites: MICR 460 or MBMB 460 or consent of instructor.

451A-3 Biochemistry. (Same as CHEM 451A and BCHM 451A) First half of the 451 A, B two semester course. Must be taken in A, B sequence. Three lectures per week. Introduction to biomolecules, biochemical techniques, expression of genetic information, basic thermodynamics, ligand binding, aqueous solutions, protein structure, spectroscopy. Prerequisites: CHEM 340 and CHEM 342 or 442, or equivalents.

451B-3 Biochemistry. (Same as CHEM 451B and BCHM 451B) Second half of 451A, B two semester course. Must be taken in A, B sequence. Basic kinetics, enzyme kinetics, enzyme inhibitors, regulation of enzymes, oxidation-reduction, high energy bonds, transport across membranes, intermediary metabolism, hormonal control of metabolism. Prerequisites: MBMB 451A or BCHM 451A or CHEM 451A or equivalent.

453-3 Immunology Lecture. (Same as MICR 453) Principles of molecular and cellular immunology. Particular emphasis is given to molecular mechanisms involved in activation and maintenance of the immune response at the basic science level. The role of the immune system in medical diagnostic procedures and in human health is also discussed. Spring semester. Prerequisite: MICR 403; or consent of instructor.

455-2 Medical Immunology. (Same as MICR 455) *This course will be offered in Springfield only.* A survey of the components of the immune system and how they interact with each other to produce responses that are important in the control or mediation of human disease. Two hours lecture. Prerequisite: Microbiology 301; or consent of instructor.

456-3 Biophysical Chemistry. (Same as BCHM 456 and CHEM 456) A one-semester course in Biophysical Chemistry intended for biochemists and molecular biologists. Emphasis will be on solution thermodynamics, kinetics and spectroscopy applied to biological systems. Prerequisite: CHEM 340 and CHEM 342 or 442, MATH

141 or 150, MBMB 451A or BCHM 451A or CHEM 451A, or equivalents.

460-3 Bacterial and Viral Genetics. (Same as MICR 460) The genetic mechanisms and regulatory events that control gene transfer, lambda phage infection, recombination, and metabolic pathways including a brief introduction to bioinformatics, genome analysis and global regulatory functions. Three hours lecture. Fall semester. Prerequisite: MICR 301 and 302, or consent of instructor.

470-3 Prokaryotic Diversity Lecture. (Same as MICR 470) A consideration of the major groups of prokaryotes with special emphasis on their comparative physiology and ecology. Three hours lecture. Spring semester. Prerequisite: Microbiology 301; or consent of instructor.

477-3 Microbial Ecology. (Same as MICR 477) Concepts of ecology applied to microorganisms; methods in microbial ecology; interactions of microbes with their living and non-living environment microbial habitats and functions. Roles and regulation of microbes in natural and man-made environments, from cellular to community level. Prerequisite: MICR 301 or instructor's consent (based on proven background in both microbiology and ecology).

480-4 Molecular Biology of Microorganisms Laboratory. (Same as MICR 480) Genetic and biochemical analyses of microorganisms using a variety of techniques in molecular biology, molecular genetics and biotechnology. Six hours laboratory per week plus two hours of supervised unstructured laboratory work in most weeks. Fall semester. Lab fee: \$60 Prerequisite: MICR 301 and 302 with a C grade or better and two (or concurrent enrollment in two) of the following: 421, 423, 425 or 460.

481-4 Diagnostic and Applied Microbiology Laboratory. (Same as MICR 481) Enrichment and isolation of prokaryotes from natural samples, diagnostic methods for the identification of pathogenic bacteria, and the nature of the immune response. Six hours laboratory per week plus two hours supervised unstructured laboratory work in most weeks. Spring semester. Lab fee: \$60. Prerequisite: MICR 301 and 302 with a C grade or better and two (or concurrent enrollment in two) of the following: 403, 453 or 470.

502-3 Introduction to Research. An introductory research course. Students rotate through at least three research laboratories. Lecture and laboratory hours to be arranged. Students can not get credit for both MBMB 502 and MBMB 504. Restricted to acceptance into the Molecular Biology, Microbiology and Biochemistry graduate program.

504-3 Research Methods. Problem definition, experimental design and research methods in specific areas of molecular biology, biochemistry and microbiology. Lecture and laboratory hours to be arranged. Students can not get credit for both MBMB 502 and MBMB 504. Restricted to acceptance into the Molecular Biology, Microbiology and Biochemistry graduate program.

505-1 Special Topics. Discussion of current research in specific areas of molecular biology, microbiology and biochemistry. One hour of group discussion per week. Special approval needed from the instructor.

510-3 Functions of Public Health System. This course is an introduction to the concepts and practices of public health at the community, state, and national levels. The course addresses

the philosophy, purpose, history, organization, functions, activities and impact of public health practice. The course also addresses a number of important health issues and problems facing the public health system. Special emphasis will be placed on the role of public health laboratory in public health practice. Discussion questions and case studies are integrated into the course, serving to stimulate student participation in gaining in-depth knowledge about real world public health issues and practice. Prerequisite: Bachelor's degree in Microbiology or other Biology, Chemistry, Physical Science.

515-1 to 6 (1 to 6 per semester) Master's Degree Research. Individualized laboratory research and training. Graded credit for Master's Degree only. Maximum 6 credit hours. Restricted to admission to master's program in Molecular Biology, Microbiology and Biochemistry. Special approval needed from the instructor.

520-2 Advanced Microbial Physiology and Control Mechanisms. The physiology, biochemistry and genetics of microbial regulatory mechanisms. Topics include transport phenomena, catabolite and nitrogen repression, the stringent response, and autoregulatory phenomena. Two lectures per week. Prerequisite: 425; or CHEM 451A and B, or consent of instructor.

521-3 Advanced Virology. An advanced, lecture-based course which will (1) emphasize principles of molecular virology, (2) discuss immune responses to viral infections, (3) learn how viral infections can be prevented or treated, and (4) explore how some viruses can be used as therapeutic agents. Each topic will include an in-depth discussion of current research literature. Prerequisites: 400 level course in genetics and in biochemistry, or consent of the instructor.

528-1 to 3 Special Readings in Molecular Biology, Microbiology and Biochemistry. Supervised readings for qualified graduate students. Special approval needed from the instructor.

530-3 Advanced Cellular Biology. (This course will be offered in Springfield only). An advanced course based on current literature concerning the cellular biology of eukaryotes. Both students and faculty will make presentations followed by discussion. Topics will include: the cellular and subcellular structure and function of the lower eukaryotes, the biochemistry and biophysics of eukaryotic membrane systems and the higher subcellular functions of mammalian cells. Prerequisite: 400 level course in genetics and in biochemistry or consent of instructor.

531-3 Molecular and Cellular Biology. Lecture course in molecular and cellular biological techniques used in the study of organisms; structures and processes involved in genome organization; packaging and replication of DNA; transcription and RNA processing; recombination and transposition of DNA; gene regulation with emphasis on developmental processes; signal transduction; structure and function of cellular components; cell-cell interaction; etc. Prerequisite: BCHM 451B or consent of instructor; MICR 460 recommended.

532-3 Methods of Structural Biology. Lecture course in molecular computer graphics, macromolecular structure prediction, molecular dynamics, applications of NMR and X-ray methods to structural determinations of biological macromolecules; spectroscopic methods including UV, IR, Raman, fluorescence and circular dichroism methods. Prerequisite: BCHM 456 or

consent of instructor.

533-3 Advanced Biochemistry. Lecture course in control mechanisms of biochemical processes, enzyme kinetics, regulation and allostery, coupled systems and energy transduction, membranes, transport, etc. Prerequisite: BCHM 451A or consent of instructor.

540-3 Basis of Public Health Laboratory Practice. The scientific basis of current laboratory practice of public health science in the areas of microbiology, immunology, molecular biology, environmental chemistry, biochemistry and instrumentation (to accompany 541A,B). Prerequisite: 510, Bachelor's degree in Biology, Chemistry, Physical Science.

541A-(3-9) Public Health Laboratory Training. This course has a laboratory component of approximately 4-6 hours/week/credit hour of training in a functioning public health laboratory. The content of the course provides in-depth experience in the scientific basis and use of analytical methods in micro biology, immunology and molecular biology that are unique to public health laboratories at state and national level. Prerequisite: MBMB 510, concurrent with 540, MICR 301 or equivalent.

541B-(3-9) Public Health Laboratory Training. This course has a laboratory component of approximately 4-6 hours/week/credit hour of training in a functioning public health laboratory. The content of the course provides in-depth experience in the scientific basis and use of analytical methods in environmental chemistry and biochemistry that are unique to public health laboratories at the state and national level. Prerequisite: MBMB 510, 541A.

543-3 Host-Microbial Interactions. (This course will be offered in Springfield only). A lecture course that deals in depth with mechanisms of symbiosis and other interactions with respect to the biochemistry of microbe and host. Immunological aspects are discussed. Emphasis is placed on molecular mechanisms. Offered alternate years. Prerequisite: 403 or 405 or consent of instructor.

551-3 Advanced Immunology. A lecture course that intensively considers the most recent developments in antibody structure, antigenic analysis, and antigen-antibody reactions. A special focus will be on the use of immunology as a research tool. Prerequisite: 453 or equivalent, or consent of instructor.

552-3 Cellular Immunology. (This course will be offered in Springfield only). A lecture-discussion course covering contemporary aspects of cellular immunology. The cellular nature of immune responses as well as current information on the regulation of such responses will be considered. Topics will include cellular components of an immune response; receptors, recognition and signals; cellular cooperation; immuno regulation; and tolerance and autoreactivity. Prerequisite: 453 or 455 or consent of instructor.

553-3 Advanced Medical Microbiology and Immunology. (Offered in Springfield only). A lecture course providing an in-depth analysis of the mechanisms of pathogenesis of bacterial, viral and mycotic infections. Immune mechanisms involved in recovery, development of immunity and infection mediated immunopathology will be covered. Prerequisite: 403 and 453; or 405 and 455; or consent of instructor.

554-1 to 4 (1 per semester) Evolution Seminar. (Same as Anthropology 554, Plant Biology 554, Zoology 554) Advanced topics in evolutionary biology including genetics & development,

evolutionary ecology, phylogeny, paleontology, biogeography, population genetics, molecular ecology, speciation, molecular evolution, and macroevolution. Topics will vary each semester. Seminar format with group discussions and student presentations. Graded *S/U*. Special approval needed from the instructor.

556-3 Phylogenetics. (Same as ANTH 556, PLB 556, ZOOL 556) An advanced introduction to modern methods of phylogenetic inference, emphasizing both theoretical background concepts and numerical approaches to data analysis. Topics include properties of morphological and molecular characters, models of character evolution, tree estimation procedures, and tree-based testing of evolutionary hypotheses. Special approval needed from the instructor.

560-3 Molecular Oncology. A lecture-discussion course in molecular and cellular biology of tumor pathogenesis. The lecture covers various aspect of current tumor biology. The in-depth discussion on recent articles will provide students with opportunity to become familiar with front-line research in molecular oncology. Prerequisite: MBMB 451A and B or consent of instructor.

562-3 Molecular Genetics. A lecture and discussion course emphasizing current research and new techniques in replication, transcription, translation, genome organization, gene flow from a general systems viewpoint and regulation. Prerequisite: 460 or consent of instructor.

568-1 Current Topics in Oncology. A seminar-discussion course covering the pace-setting topics in oncology research. The topics will be selected by the course director. Students will research and select articles to be presented for discussion. The in-depth discussion on recent articles will provide students with opportunity to become familiar with cutting edge line research in oncology. Prerequisite: MBMB560 or consent of instructor.

570-1 to 15 (1 to 6 per semester) Advanced Topics. Advanced topics in (a) Molecular Biology, (b) Biochemistry, (c) Microbiology, (d) Immunology, (e) Virology, (f) Structural Biology, (g) Biophysics, and (h) General Cell Biology. Selected topics of current scientific interest to the faculty and students. Specific topic to be covered in any semester will be announced. Special approval needed from the instructor.

580-1 Current Topics in Evolution. (Same as ANTH 580, ZOOL 580) The Evolution Discussion Group meets weekly throughout the year to discuss current evolutionary literature and the research of participants. All students and faculty with an interest in evolutionary biology are welcomed to participate.

597-1 to 15 (1 per semester) Seminar and Professional Training. Departmental seminars, and other appropriate professional assignments. Graded *S/U* only. One hour required each semester in residence. Restricted to graduate standing.

598-1 to 66 (1 to 12 per semester) Research. Graded *S/U* only. Special approval needed from the instructor.

599-1 to 6 (1 to 6 per semester) Thesis. Research for Master's degree thesis. Special approval needed from the instructor.

600-1 to 36 (1 to 12 per semester) Dissertation. Research for Ph.D. degree dissertation. Special approval needed from the instructor.

601-1 (1 per semester) Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation,

thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Molecular, Cellular, and Systemic Physiology

www.siumed.edu/physiology

physiology@siu.edu

SCHOOL OF MEDICINE

Graduate Faculty:

Arbogast, Lydia A., Professor, Ph.D., Indiana University, 1988; 1996. Molecular aspects of reproductive neuroendocrinology.

Banerjee, Chandra, Professor, *Emeritus*, M.D., University of Calcutta, 1955, Ph.D., Medical College of Virginia, 1967; 1974.

Bany, Brent M., Associate Professor, Ph.D., University of Western Ontario, 1997; 2003. Reproductive Physiology; Embryo implantation; Fertility.

Bartke, Andrzej, Professor, *Emeritus*, Ph.D., University of Kansas, 1965; 1984.

Browning, Ronald A., Professor, *Emeritus*, Ph.D., University of Illinois Medical Center, Chicago, 1971; 1973.

Cai, Xiang, Assistant Professor, Ph.D., Sun-Yat Sen University, China, 2000; 2011. Mechanisms underlying chronic stress-induced depression and the molecular basis of the therapeutic effect of antidepressants.

Cheatwood, Joseph, Associate Professor, Ph.D., University of Florida, 2004; 2009. Mechanisms of neuroprotection and recovery of function following central nervous system injury.

Clough, Richard W., Professor, Ph.D. University of Nebraska, 1983; 1987. Concussive brain injury and recovery of behavioral function following injury.

Collard, Michael W., Associate Professor, *Emeritus*, Ph.D., Washington State University, 1987; 1993.

Coulson, L. Richard, Professor, *Emeritus*, Ph.D., University of Toronto, Canada, 1971; 1978.

Cox, Thomas C., *Emeritus*, Professor, Ph.D., Arizona State University, 1979; 1982.

Dunagan, Tommy T., Professor, *Emeritus*, Ph.D., Purdue University, 1960; 1962.

Ellert, Martha, Associate Professor, *Emerita*, Ph.D., University of Miami, 1967; 1975.

Ellsworth, Buffy S., Associate Professor, Ph.D., Colorado State University, 2002; 2007. Endocrinology, pituitary gland development.

Falvo, Richard E., Professor, *Emeritus*, Ph.D., University of Wyoming, 1970; 1973.

Ferraro, James S., Associate Professor, Ph.D., The Chicago Medical School, 1984; 1987. Physiological and behavioral aspects of circadian rhythmicity; reproduction and sexuality.

Hales, Dale Buchanan, Professor and *Chair*, Ph.D., University of Colorado Health Sciences Center, Denver, 1983; 2009. Reproductive endocrinology, role of oxidative stress and inflammation in hormonal carcinogenesis, ovarian cancer, steroid biochemistry, male reproduction.

Hayashi, Kanako, Assistant Professor, Ph.D., Iwate University, Japan, 2002; 2008. Reproductive biology and cancer biology.

Huggenvik, Jodi I., Associate Professor, *Emerita*, Ph.D., Washington State University, 1985; 1993.

Hunter, William S., Associate Professor, *Emeritus*, Ph.D., Michigan State University, 1971; 1975.

Maclean, James A., Associate Professor, Ph.D., University of Missouri-Columbia, 2000' 2007. Reproductive biology, spermatogenesis, gene regulation.

Murphy, Laura, Professor, *Emerita*, Ph.D., Medical College of Georgia, 1984; 1987.

Myers, Hurley, Professor, *Emeritus*, Ph.D., University of Tennessee, 1969; 1971.

Narayan, Prema, Associate Professor, Ph.D., University of Minnesota, 1984; 2005 Mouse models of gonadotropin receptor function, reproductive endocrinology.

Nequin, Lynn, Associate Professor, *Emerita*, Ph.D., University of Illinois Medical Center, Chicago, 1970; 1976.

Patrylo, Peter R., Associate Professor, Ph.D., Rutgers University—UMDNJ/RWJMS, 1991; 2001. Plasticity and regulation of local neuronal networks during aging and following injury, particularly in the context of epileptogenesis.

Rose, Gregory M., Professor, Ph.D., University of California, Irvine 1980; 2009. Understanding the basis of and developing treatments for age-related learning and memory disorders.

Shanahan, Michael F., Professor, *Emeritus*, Ph.D., University of Michigan, 1976; 1985.

Steger, Richard W., Professor, *Emeritus*, Ph.D., University of Wyoming, 1974; 1985.

Strader, April D., Associate Professor, Ph.D., University of Wisconsin-Milwaukee, 2002; 2005 Neuroendocrine regulation of body weight regulation.

Wade, David, Associate Professor, *Emeritus*, Ph.D., Cambridge University, 1967; 1974.

Yau, William M., Professor, *Emeritus*, Ph.D., Medical College of Virginia, 1971, 1973.

Zheng, Zhengui (Patrick), Assistant Professor, Ph.D., Shanghai University of Traditional Chinese Medicine, 1997; 2014. Developmental and molecular basis of sexual differentiation during vertebrate organogenesis.

Graduate courses in physiology may be taken leading to the Master of Science or the Doctor of Philosophy degrees with a major in molecular, cellular, and systemic physiology. Graduate courses in molecular, cellular, and systemic physiology may also contribute to a program leading to a Master of Science degree major in biological sciences or to a teaching specialty for the Master of Science in Education degree major in secondary education or in higher education.

The Department of Physiology offers advanced training in mammalian physiology, aging, cancer biology, cell physiology, molecular biology, molecular endocrinology, neuro-endocrinology, neurophysiology, neuropharmacology, reproductive biology, and reproductive endocrinology, metabolism and human anatomy. Students entering the graduate training program are advised to plan the course work so as to acquire a broad knowledge of the field before emphasizing one of these sub-disciplines. The advisory system in the department is set up to help students in planning their work. All graduate training programs in the department are subject to approval of the graduate pro-gram committee (GPC) of the department.

Each term the student must be engaged in a training

assignment which supplements formal course work and will consist of research or teaching or both. The student is required to have participated in both types of activities, research and teaching, as a graduate student at SIU as a condition for receiving a graduate degree.

Prerequisites for graduate training in molecular, cellular, and systemic physiology include an undergraduate degree in one of the biological, physical, or behavioral sciences, preferably with one year each of physics, mathematics, and chemistry.

Financial Assistance

The Department of Physiology offers financial assistance to qualified applicants accepted by the department. The funds which provide this assistance come from a variety of sources which include: teaching assistantships from the department; university fellowships which are applied for directly by the student; and research assistantships from grants obtained by the graduate program faculty. Students interested in financial assistance should fill out the Financial Support Form available online and in the Department of Physiology office. Additional financial aid information may be found at the SIU Financial Aid Office web page. Financial assistance depends on availability and the student's qualifications and academic status. Continued financial support is contingent upon the student's progress toward the degree and good academic standing.

The department may support master's students for up to 24 months and Ph.D. students for 48 months on department teaching assistantships. However, every effort will be made to encourage the student and his/her adviser to find alternative sources of funding. Continuation of support will be conditioned on satisfactory performance in areas of academics, research, and teaching. Academic performance will be based on good standing in the Graduate School (3.25 GPA) and passage of the preliminary exam by the end of the third year (Ph.D. students only). Satisfactory research performance will be based on the filing of an approved research proposal by the end of the first (master's) or second (Ph.D.) calendar year and after that time by an annual memo from the student's advisory committee indicating progress in the area of research. It will be the student's responsibility to provide this documentation to the GPC. Evaluation of teaching effectiveness will be carried out by the GPC from sources possibly but not limited to the course coordinator, student evaluations and by direct observation of classes by the GPC.

A departmental stipend for graduate student research will be available to molecular, cellular, and systemic physiology graduate students working in laboratories of regular physiology department faculty members provided that the student is making satisfactory progress in their research program and remains in good academic standing (as defined above).

Research Tools

Doctoral students must acquire competence in one research tool and are encouraged to attain competence with two tools. The requirements for a research tool may be satisfied by establishing proficiency in advanced statistics, computer science, electronics, advanced mathematics, electron microscopy, foreign language (with suitability of a particular language being determined by the student's committee), or some technique which is acceptable to the student's advisory committee. Courses

which are normally part of a track requirement or are highly recommended for students in a particular track cannot serve as tools for students in that track. Approval of a given tool by the student's committee will be granted only if the student has demonstrated proficiency by taking a formal course and receiving a grade (preferably *B* or better) or by passing a formal examination given by an expert in that field (preferably a faculty member in the university department where the subject is normally taught).

Master's Degree

The application should be submitted online through the Graduate School. All applicants must submit a brief (300-600 words) statement of goals and ambitions indicating why they wish to go graduate work and three letters of recommendation submitted by individuals who can comment on their academic abilities, character, and potential for doing research. The Graduate Record Exam (GRE) is required, and the score on the general part must be submitted with the application.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Molecular, Cellular, and Systemic Physiology. Applicants may pay this fee by credit card.

The Graduate School requires an earned grade point average (GPA) of 2.70 or better ($A = 4.0$) on all undergraduate work. A minimum GPA of 3.00 ($A = 4.0$) in all undergraduate and graduate work is needed for serious consideration.

The graduate program committee of the department will normally examine the credentials, which include the application form, transcript(s), letters of recommendation, goal statement, and GRE scores, only after all materials have been received.

International students must take the TOEFL exam and obtain a score greater than 550 (paper score) or 220 (computer score) to qualify for admission by the Graduate School, and must pass a Test of Spoken English prior to the awarding of teaching assistantships by the Department of Physiology.

Advisory Committee

The Director of Graduate Studies will act as an advisor to new graduate students until a research advisor is selected. The choice of a research advisor is a very important step and should be carefully considered. During the first semester, most students rotate through four research laboratories to get acquainted with faculty members and research programs before selecting an advisor who will direct the thesis research and help plan course work.

The functions of the research advisor are:

1. To provide guidance in the student's research and the use of facilities.
2. To provide mentorship in conducting, evaluating, and publishing scientific research.
3. To serve as chair of the Advisory Committee and consultant for the selection of the other members of the Advisory Committee (at least three additional members from the graduate faculty, including one from outside the department).

Members of the Advisory Committee should provide expertise in or complementary to the research area and provide guidance

in the selection of course work. The student should meet with the committee yearly or as needed to discuss research and academic progress.

Following the selection of a research advisor and the Advisory Committee, the Graduate Faculty Committee Approval Form (available online and in the department office) must be filled out with the names and signatures of committee members and filed with the department secretary. The completed form will then be forwarded to the Graduate School for final approval.

Total Hours Required

A total of 30 semester hours at the 400- and 500-level is required for the master's degree. Of the total hours completed, at least 21 of these must be graded (A, B, C) hours. At least 15 of the total 30 must be 500-level courses taken at SIU. Of these 15, a *minimum* of 3 hours of PHSL 599 (thesis) is *required*. More than 3 hours of 599 may be taken, however only 6 may be counted toward the 500-level requirement.

Thesis

The thesis should represent a competent piece of original research carried out on a specific physiological problem or area under the research advisor's supervision. It should include an adequate review of the literature, a statement of the hypothesis, a set of experiments testing the hypothesis by whatever methods are appropriate, an analysis of the results, and an interpretation of the work and its significance. Upon completion of the thesis research, a final department seminar is presented followed by an oral examination. The examination will be conducted by the Advisory Committee and will cover the subject of the thesis and other matters related to the discipline.

Doctoral Program

The Graduate School requires a grade point average in previous graduate work of at least 3.25 and acceptance by the academic unit offering the Ph.D. program. See the following pages for accelerated and direct entry options.

The application should be submitted online through the Graduate School. All applicants must submit a brief (300-600 words) statement of goals and ambitions indicating why they wish to go graduate work and three letters of recommendation submitted by individuals who can comment on their academic abilities, character, and potential for doing research. The Graduate Record Exam (GRE) is required, and the score on the general part must be submitted with the application.

This program requires a nonrefundable \$50.00 application fee that must be submitted with the application for Admissions to Graduate Study in Molecular, Cellular, and Systemic Physiology. Applicants may pay this fee by credit card.

The graduate program committee of the department will examine the credentials which include the application form, transcript(s), letters of recommendation, goal statement and GRE scores (if applicable) only after all materials have been received.

International students must take the TOEFL exam and obtain a score greater than 550 (paper score) or 220 (computer score) to qualify for admission by the Graduate School, and must pass a Test of Spoken English prior to the awarding of teaching assistantships by the Department of Physiology.

Ph.D. Direct Entry Option

This option is presently available for admission to the Graduate School. Contact the Department of Physiology for further information regarding this option. The Department of Physiology may accept a post-baccalaureate student directly into a Ph.D. program provided that the student has:

1. A cumulative undergraduate grade point average of 3.25 (A = 4.0).
2. Sufficient undergraduate course work in biology, chemistry, physics, and mathematics or an outstanding score on the graduate record exam (GRE) on (a) the general part or (b) the advanced part in biology, chemistry, physics, or mathematics.

A student admitted to the doctoral program under this option is subject to the admissions requirements stated above and all other requirements of the doctoral degree, including: course work, retention, residency, examinations, research proposal, dissertation, and all applicable time limits. The Advisory Committee may adjust the course work and requirements of the student based on the student's background and research area. Students who have taken one or more core courses at another accredited university may be given credit toward their core requirements if such courses are deemed equivalent to our core courses by the Graduate Program Committee and department grade requirements are met.

Ph.D. Accelerated Entry Option

The Department of Physiology offers the Ph.D. accelerated entry option to a graduate student in the Master's program who demonstrates the intellect, research aptitude, and commitment for pursuing a doctoral degree. At the end of at least one year of studies at the Masters level, the student may request that their Advisory Committee review their qualifications and performance in order to establish eligibility for entry into the doctoral program under this option. The student must have a GPA of at least 3.25 (A = 4.0) in graduate course work and letters of reference attesting to the student's abilities and potential to perform doctoral level research. The Advisory Committee must establish that the student is prepared and able to conduct re-search at the doctoral level, which may be established by publications; presentations at meetings; depth of understanding; and quality of seminars, presentations, and research proposal. The Advisory Committee will make a recommendation that the student should either continue in the Master's program or advance into the doctoral program.

After the student's eligibility has been established, the research advisor and/or the Advisory Committee will pre-prepare a written review of the student's qualifications and submit it to the Graduate Program Committee for approval. The Graduate Program Committee will then submit a recommendation to the Chair of the Department of Physiology, who will in turn submit a letter to the Graduate School requesting a waiver of a master's degree or master's equivalency and entry into the doctoral program.

The student will need to submit the following items to the Graduate School: A letter of acceptance into the doctoral program from Graduate Program Committee Chair, a Graduate School

application form (indicating Ph.D.), and a completed Notification of Accelerated Entry Option Students Form.

A student admitted to the doctoral program under this option is subject to all requirements of the doctoral degree, including: course work, retention standards, residency, examinations, research proposal, dissertation, and all applicable time limits.

Please note that only courses taken after admission to the doctoral program will count toward residency.

Advisory Committee

The Director of Graduate Studies will act as an advisor to new graduate students until a research advisor is selected. The choice of a research advisor is a very important step and should be carefully considered. During the first semester, most students rotate through four research laboratories to get acquainted with faculty members and research programs before selecting an advisor who will direct the dissertation research and help plan course work.

The functions of the research advisor are:

1. To provide guidance in the student's research and the use of facilities.
2. To provide mentorship in conducting, evaluating, and publishing scientific research.
3. To serve as chair of the Advisory Committee and consultant for the selection of other members of the Advisory Committee (at least four additional members from the graduate faculty, including one from outside the department).

Members of the Advisory Committee should provide expertise in or complementary to the research area and provide guidance in the selection of course work. The student should meet with the committee yearly or as needed to discuss research and academic progress.

Following the selection of a research advisor and the Advisory Committee, the Graduate Faculty Committee Approval Form (available in the department office) must be filled out with the names and signatures of committee members and filed with the department secretary. The completed form will then be forwarded to the Graduate School for final approval.

Total Hours Required

The requirements for the Ph.D. degree are those established by the Graduate School, the Guide to Graduate Studies and the student's advisory committee. The Graduate School requires 24 semester hours prior to candidacy and 24 semester hours of dissertation credit. Of the total hours completed, at least 10 of these must be graded (A, B, C) hours.

Preliminary Examination

Preliminary examinations for doctoral students consist of a set of written exams covering the student's research area and course work, a research proposal in the area of the dissertation research project, and an oral defense of the proposal. In most cases, the written exams are taken in early August after completion of the second year of study. After passing the written exams, the student will have one month to write the research proposal. The student's Advisory Committee will evaluate the research proposal and if it is found acceptable, the oral defense of the proposal will be scheduled with the Advisory Committee.

Details of the preliminary examinations are available from the Graduate Program Committee.

Dissertation

The dissertation should represent a competent piece of original research carried out on a specific physiological problem or area under the advisor's supervision. It should include an adequate review of the literature, a statement of the hypothesis, a set of experiments testing the hypothesis by whatever methods are appropriate, an analysis of the results, and an interpretation of the work and its significance. The research should be of sufficient quality and quantity to merit publications in peer-reviewed journals. Upon completion of the dissertation research, a final department seminar is presented followed by an oral examination. The examination will be conducted by the Advisory Committee and will cover the subject of the dissertation and topics related to the discipline.

Certificate in Anatomy

The purpose of the anatomy certificate is to allow graduate students to become proficient in anatomy teaching. This will allow them to compete more effectively for jobs in this field. Students are eligible for the anatomy certificate if they are in an existing anatomically-based master's or Ph.D. program (e.g. Physiology, Anthropology, or Zoology). Additional prerequisites (e.g., embryology, basic vertebrate anatomy) are preferred. Students lacking such prerequisites will be encouraged to obtain them prior to admission into the anatomy certificate program. The Graduate Program Committee of the Department of Physiology will review all applications. In addition to graduate coursework in anatomy, students in the anatomy certificate program will obtain experience teaching gross anatomy to undergraduates and medical students. A minimum of 17-18 graduate credit hours are required for fulfillment of the certificate requirements. They are: Advanced Human Anatomy, (PHSL 401a,b, 10 hours), Histology, (ZOOL 409, 4 hours) and either Neuroanatomy, (PHSL 573, 3 hours) or Comparative Vertebrate Anatomy, (ZOOL 418, 4 hours). Where appropriate, these courses may also count for credit toward the master's or Ph.D. degree. The Graduate Program Committee in the Department and the student's advisory committee will make recommendations for other course-work and oversee the student's progress. In addition to graduate coursework in anatomy, students in the anatomy certificate program will obtain experience teaching gross anatomy to undergraduates and medical students. Students supported by assistantships will have the same teaching obligations as all other departmentally supported students. Students will be required to teach at least two semesters of gross anatomy assisting Physiology and Anatomy Department faculty in the Medical School.

For more information, contact:

Director of Graduate Studies
Department of Physiology, School of Medicine
Southern Illinois University
Carbondale, IL 62901-6512
Telephone: 618-453-1544
Email: physiology@siu.edu

Courses (PHSL)

401-5 Advanced Human Anatomy with Laboratory. A-B sequence. Laboratory dissection of the human body with lectures as needed. Primarily for students majoring in physiology, biological sciences, anthropology, or pre-medical fields. Prerequisite: PHSL 301. Enrollment by consent of instructor. Lab fee: \$20.

420A,B-6 (3,3) Principles of Pharmacology. Examines basic principles of pharmacology (pharmacokinetics) and the action of various classes of drugs on living organisms. Drug classes covered include those affecting most organ systems of the human body, such as the nervous, cardio-vascular, gastrointestinal and renal systems as well as drugs used for antibiotic and cancer chemotherapy. Three lectures per week. Prerequisite: PHSL 310 or 410, Chemistry 340 and 342 (or equivalent).

426-3 Comparative Endocrinology. (Same as ANS 426, ZOOL 426) Comparison of mechanisms influencing hormone release, hormone biosynthesis, and the effects of hormones on target tissues, including mechanisms of transport, receptor kinetics, and signal transduction. Prerequisites: PHSL 310 or ANS 331 or ZOOL 220 with a grade of C.

430-3 Cellular and Molecular Physiology. This course will examine the molecular and cellular aspects of physiology, with special emphasis on the experiments used to examine the regulation of gene expression, protein activities, and cellular functions in eukaryotes. Topics include: mechanisms regulating gene expression, signaling path-ways, cancer biology, and the use of experimental model organisms. Required of Physiology majors. Prerequisite: BIOL 200 A & B or CHEM 350 & 351.

433-3 Comparative Physiology. (Same as ZOOL 433) Variations of physiological processes in animal phyla, comparison with human physiology, and review of basic physiology principles and comparative aspects of mechanism of function. Prerequisite: BIOL 200A; BIOL 200B or PHSL 310 with grades of C or better.

434-3 Environmental Physiology. (Same as ZOOL 434) Physiological adaptations to environmental conditions in animals and humans. Lab/lecture course explores molecular, hormonal, immunological, developmental and phenotypic processes mediating responses to factors such as stress, disease, contaminants, nutrition and life history trade-offs. Prerequisite: BIOL 307 or PHSL 310 or ZOOL 433 with a grade of C or better. Laboratory/field trip fee \$20.

440-6 (3,3) Biophysics. (a) Biomathematics, biomechanics and biotransport. (b) Bioelectrics and biooptics applied to physiological problems. Three lectures per week. Prerequisites: MATH 141 or 150; PHSL 310; PHYS 203 A&B and 253 A&B or PHYS 205 A&B and 255 A&B. May be taken in B,A sequence with consent of instructor.

450-3 Advanced Human Sexuality. (Same as WGSS 449) An advanced, comprehensive course intended to supplement and expand the critical examination of topics covered in PHSL 320, Reproduction and Sexuality. The objective of this course are to examine the physiological and behavioral basis of human reproduction and sexuality. Examines how humans reproduce from a physiological perspective including all aberrations and clinically relevant dysfunctions, as well as, the spectrum of human sexual behaviors including typical and atypical sexual behavior, paraphilias and diversity of human relationships.

Prerequisite: PHSL 320.

460-2 Electron Microscopy. Lecture course designed to introduce the student to the theory and principles of electron microscopy. Two lecture hours per week. Restricted to senior standing or permission of instructor.

462-3 Biomedical Instrumentation. Diagnostic and therapeutic modalities related to engineering. Cardiovascular, neural, sensory and respiratory instrumentation. Special approval needed from the instructor.

470-3 Biological Clocks. Study of the temporal aspects of diverse physiological and behavioral functions which possess diurnal and sectional periodicity. Species covered will include many eukaryotic organisms including plants, but will mainly stress mammals. Oscillations in sleep-wake cycle, locomotion, reproduction, hormonal secretion and numerous other processes will be explored. In addition, the effects of biological clocks in humans and the effect of jet lag and depression will be examined. Prerequisite: 310.

500-1 to 6 (1 per semester) Advanced Seminar in Physiology. Presentation of research and current literature in physiology. Required of all graduate students in physiology. Graded S/U only.

501-1 Presentation of Physiological Data. Research areas and special topics requisite for conducting scientific research will be presented. Students will learn how to organize a talk on experimental findings in physiology, prepare slides, and communicate effectively in an oral presentation format. Graded S/U only.

510-3 Experimental Methods in Physiology. The main objectives of this course are to acquaint the student with the techniques and the equipment used in modern research laboratories and to provide instruction in the principles and practice of scientific experimentation. Restricted to Physiology (MCSP) Graduate Students only.

511A-1 to 5 Advanced Mammalian Physiology. Physical and chemical organization and function in mammals, with emphasis on the human. Physiology of blood and circulation, respiration, digestion, metabolism, excretion, endocrines, sensory organs, nervous system, muscle and reproduction. Four lectures and one seminar per week. Seminar will consist of primary literature discussion and student presentation on areas covered in lecture. Principal lecturer for each of the area topics will lead discussion and assign the primary literature. May be taken in any sequence. Restricted to consent of department. Special approval needed from the instructor.

511B-1 to 5 Advanced Mammalian Physiology. Physical and chemical organization and function in mammals, with emphasis on the human. Physiology of blood and circulation, respiration, digestion, metabolism, excretion, endocrines, sensory organs, nervous system, muscle and reproduction. Four lectures and one seminar per week. Seminar will consist of primary literature discussion and student presentation on areas covered in lecture. Principal lecturer for each of the area topics will lead discussion and assign the primary literature. May be taken in any sequence. Restricted to consent of department. Special approval needed from the instructor.

520-4 Reproductive Function and Sexual Behavior. Advanced, comprehensive course examining the physiological and behavioral basis of human reproduction and sexuality.

Topics include physiology and pathophysiology of the human reproductive system and normal and atypical sexual behavior. Course topics will include didactic presentations and problem-based lab discussions selected by the students selected from lecture or related topics. The class will meet three times weekly for didactic presentations and once a week for a three hour extensive discussion and presentation utilizing self-directed learning strategies and knowledge in a problem-based format, similar to that used in the medical school curricula. Special approval needed from the instructor.

530-3 Advanced Cellular and Molecular Physiology. This course will examine the molecular and cellular aspects of mammalian physiology using the primary literature as the source of topics for oral presentations and discussions. Special approval needed from the instructor.

531-2 Advanced Cellular Physiology Laboratory. One one-hour lecture and one three-hour laboratory per week, designed to be taken concurrently with 530. Basic experimental procedures used in studies in cellular physiology.

533-4 Advanced Comparative Physiology. Advanced concepts and techniques used in current studies in comparative physiology. Three lectures and one discussion period per week.

540-3 Advanced Biophysics. Survey of recent biophysical research with emphasis on historical development of current advances. Three lectures per week. Prerequisite: PHSL 440 or its equivalent.

570-3 Advanced Physiological Topics. Studies of current research and literature in various topic areas of physiology. One or more of the following list of topic sections will be offered each semester, so that each section will be available once every two or three years. (a) Biological structure, (b) Cardiovascular physiology, (c) Respiratory physiology, (d) Nerve-muscle physiology, (e) Metabolism, (f) Gastrointestinal physiology, (g) Neurophysiology, (h) Radiation physiology, (i) Environmental physiology, (j) Biomathematics, (k) Biomedical computing, (l) Endocrinology, (m) Animal care, (n) Biophysics, (o) Pharmacology, (p) Special topics, (q) Reproductive physiology, (r) Renal physiology.

571-3 Research and Problems in Biological Transmission Electron Microscopy (TEM). Laboratory course designed to provide experience in techniques for biological electron microscopy. Student, with the aid of the instructor, designs and carries out a project in transmission electron microscopy. Two three-hour laboratories per week. Prerequisite: PHSL 460 or special permission of instructor.

573-3 Neuroanatomy. A detailed survey of human neuroanatomy. The course will include radiographic, cross-sectional and developmental anatomy of the nervous system. Dissection of the human brain will occur in general laboratory sessions. Three lectures per week.

574-3 Neuropharmacology. (Same as PHRM 574) A detailed examination of the biochemical aspects of neuropharmacology with emphasis on neurotransmitters—their synthesis, storage, release and metabolism in the central and peripheral nervous system. Considerable emphasis is placed on major research developments (both past and present) that influence how one studies the action of drugs on the nervous system. Prerequisite: PHSL 410, and CHEM 450, or equivalent.

575-3 Neuroendocrinology. Designed to investigate and

discuss the current research and historical aspects of the field of neuroendocrinology. In addition, designed to have students examine and evaluate current literature in the field and through discussion have them present their analysis of the research. One hour of lecture, one hour of discussion of textual material, one hour of multiple reports on library research. Prerequisite: PHSL 410A, B or equivalent, or an undergraduate/graduate endocrinology course, or consent of instructor.

581A-3 Multimedia in Medical Education. Students will participate in the daily discussions of a medical education multimedia corporation. Emphasis will be on process and instructional design. Students will be supervised by team members in the production of commercial educational packages. Skills to be acquired include the ability to digitize images and sound, and to create a Power Point presentation on a topic of the student's choice.

581B-6 Advanced Multimedia in Medical Education. Intended to be a "hands on" course which contributes significantly to the development of multimedia teaching materials for medical education. Students will be assigned to a project as part of a development team. Under supervision of the team leader, they will assist in software design, material preparation and assembly. Prerequisite: PHSL 581A.

582-3 Clinical Application/Radiology. The study of human anatomy through imaging techniques such as standard x-rays, computer assisted tomography (CT) and magnetic resonance imaging (MRI). The course will include individualized work with clinical specialists in a hospital setting for 1/2 day per week with times to be arranged. Restricted to graduate status, acceptance into anatomy certificate program. Graded *S/U*.

590-1 to 4 Readings or Research in Current Physiological Topics. By special arrangement with the instructor with whom the student wishes to work. Graded *S/U* only.

598-1 to 48 (1 to 12 per semester) Research. The credit hours selected for this course registration will be determined by the major professor of the student. In a typical semester no more than six hours will be taken by a student except under special circumstances. Graded *S/U* only. Special approval needed from the instructor.

599-1 to 6 Thesis Research. Research for thesis for Master's degree.

600-1 to 32 (1 to 16 per semester) Dissertation Research. Research for dissertation for Ph.D. degree.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Music

www.music.siu.edu/
gradmus@siu.edu

COLLEGE OF LIBERAL ARTS

Graduate Faculty:

Allison, Robert, Visiting Associate Professor, D.M.A., University of Illinois, 1988; 1982. Trumpet, Jazz Improvisation.
Barta, Michael, Professor, M.M., Liszt Academy Conservatory, 1975; 1985. Violin, Chamber Music, Music Literature.
Beattie, Donald, Associate Professor, *Emeritus*, M.M., University of Colorado, 1977; 1979.
Bell, Cully, Lecturer, Ph.D., University of Cincinnati, 2010. Piano Pedagogy.
Benyas, Edward, Professor, J.D., Northwestern University, 1987; 1994. Oboe, Orchestra.
Best, Richard, Professor, *Emeritus*, Metropolitan Opera School, 1968; 1984.
Bottje, Will Gay, Professor, *Emeritus*, A.Mus.D., Eastman School of Music, 1955; 1957.
Breznikar, Joseph, Professor, *Emeritus*, M.M., University of Akron, 1977; 1980.
Brown, Philip, Professor, M.M.E., University of North Texas, 1983; 1991. Jazz, Bass, Music Business.
Brozak, George, Sr. Lecturer, Ed.D. University of Illinois, 2004; 2009. Athletic Bands.
Butler, Jessica, Lecturer, D.M.A., University of Iowa, 2013; 2014. Low Brass, Music History.
Butler, Christopher, Lecturer, M.M., University of Illinois, 2012; 2014. Percussion.
Coloton, Diane, Sr. Lecturer, D.M.A., Indiana University, 2006; 2007. Voice.
Davenport, Susan, Associate Professor, D.M.A., Texas Tech University, 2001; 2005. Choral.
Delphin, Wilfred, Professor, *Emeritus*, D.M.A., University of Southern Mississippi, 1978; 1988.
Dillard, David, Associate Professor, D.M.A., University of Michigan, 2004; 2005. Voice.
Fink, Timothy, Professor, M.F.A., Southern Illinois University Carbondale, 1993; 1994. Opera, Music Theater.
Fligel, Charles, Associate Professor, *Emeritus*, M.M., University of Kentucky, 1966; 1976.
Grzych, Frank, Professor, D.M.A., The Catholic University of America, 2004; 2013, Conducting, Music Education.
Hanes, Michael D., Professor, *Emeritus*, M.M.Ed., Southern Illinois University Carbondale, 1965; 1970.
Hussey, George, Professor, *Emeritus*, M.A.Ed., Washington University, 1963; 1963.
Johnson, Maria, Associate Professor, Ph.D., University of California, Berkeley, 1992; 1997. Ethnomusicology.
Kato, Yuko, Associate Professor, D.M.A., Manhattan School of Music, 2007; 2008. Piano.
Kelley, Richard, Assistant Professor, D.M.A., 2011, 2008. Saxophone, Jazz Studies.
Lausell, Isaac, Lecturer, D.M.A., Stony Brook University, 2009; 2012. Guitar Performance, Jazz.
Lee, Junghwa, Associate Professor, D.M.A., Eastman School of Music, 1999; 2005. Piano.
Lenz, Eric, Associate Professor, D.M.A., University of Alabama, 2002; 2003. Cello, Music Theory.
Lord, Suzanne, Associate Professor, *Emerita*, D.M.A., Florida State University, 1998; 1997.

Lyons, David, Staff Accompanist, D.M.A., University of Oregon, 1999; 2007.
Mandat, Eric, Professor, D.M.A., Eastman School of Music, 1986; 1981. Clarinet, Music Theory.
Mellado, Daniel, Associate Professor *Emeritus*, Ph.D., Michigan State University, 1979; 1979.
Melton, Paula, Assistant Instructor, B.S., University of Illinois, 1979; 1999. Youth Music.
Mochnick, John, Professor *Emeritus* D.M.A., University of Cincinnati, 1978, 1984.
Morehouse, Christopher, Associate Professor, D.M.A., University of Cincinnati College-Conservatory of Music, 2005; 2005. Bands, Conducting.
Poulos, Helen, Associate Professor *Emerita*, D.M., Indiana University, 1971; 1969.
Presar, Jennifer, Sr. Lecturer, M.M., West Virginia University, 2000; 2001. Horn.
Reifinger, James L., Jr., Assistant Professor, D.M.E. Indiana University, 2007; 2013. Music Education.
Robert, John, Lecturer, D.M.A., Ohio State University, 2013; 2015. Bassoon, Aural Skills.
Selvey, Jeremiah, Lecturer, M.M., Emory University, 2008; 2014. Choral, Voice.
Simmons, Margaret, Professor *Emerita*, M.Mus., *Emerita*, University of Illinois, 1976; 1977.
Stemper, Frank, Composer In Residence (Professor), *Emeritus*, Ph.D., University of California, Berkeley, 1981; 1983. Composition, Computer Music, Music Theory.
Suwanawongse, Metiney, Lecturer, M.M. Southern Illinois University Carbondale, 2013; 2015.
Transue, Arlene, Lecturer, M.M., University of British Columbia, 1992; 2008. Vocal Performance.
Transue, Paul, Associate Professor, D.M.A., Eastman School of Music, 1999; 2007. Collaborative Piano.
Underwood, Jervis, Professor, *Emeritus*, Ph.D., North Texas State University, 1970; 1971.
Wagner, Jeanine, Professor, *Emerita*, D.M.A., University of Illinois, 1987; 1984.
Walczak, Christopher, Assistant Professor, D.M.A., Rice University 2013; 2015.
Weiss, Robert, Professor *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1984; 1978.
Werner, Kent, Associate Professor *Emeritus*, Ph.D., University of Iowa, 1966; 1963.
Worthen, Douglas, Assistant Professor, D.M.A., University of Hartford, 2007; 2008. Flute, Music History.

The Graduate Faculty in the School of Music is made up of accomplished performers, composers, and scholars with a deep concern for preparing their Master of Music students for future success. In addition to their many professional activities – both nationally and internationally, they present many recitals, lectures, and workshops for the University community on the SIUC campus. Please visit the SIUC School of Music website and the SIUC Graduate School website for more information at:

<http://www.music.siu.edu/>

<http://www.gradschool.siu.edu/>

Master of Music - 7 concentrations

Performance (for emphases see list below)
 Theory/Composition

History/Literature
 Music Education
 Opera/Music Theater
 Piano Education Arts
 Collaborative Piano

Performance Emphases:

Orchestral Instruments
 Piano
 Vocal
 Guitar
 Orchestral Conducting
 Wind Conducting
 Choral Conducting

Performing Ensembles

The strength of the SIUC School of Music is the abundance of performing opportunities available to its students. There are vast performing opportunities for all Master of Music performers and composers, often working side by side with their mentors.

Ensembles include: Southern Illinois Symphony Orchestra, SIUC Wind Ensemble and Concert Band, SIUC Concert Choir, Chamber Choir, and Choral Union, SIUC Jazz Ensemble, The Marjorie Lawrence Opera Theater, SIUC Guitar Ensemble, Southern Illinois Improvisation Unit, SIUC Percussion Ensemble, The SIUC Flute Choir, SIUC Clarinet Choir, and Marching Salukis. Other elite ensembles include The SIUC Graduate String Quartet, The Altgeld Chamber Players, Southern Illinois Jazztet, The Southern Illinois Chamber Music Society, and the New Chicago Chamber Orchestra.

Throughout the year there are hundreds of concerts, recitals, operas, musicals, and emerging composer recitals.

School of Music Resources

The newly renovated Morris Library is a fully functional and impressively equipped research center.

The School of Music is a three building complex including Shryock Auditorium, The Old Baptist Foundation Recital Hall, and the newly renovated Altgeld Hall, a replica of King Ludwig's Bavarian castle! Facilities include:

- Rehearsal spaces for large ensembles, choral, jazz, music theater, and chamber music, which often serve as alternate performance spaces;
- Practice rooms, including rooms for piano majors and three practice organs: a four-rank Ott tracker organ, a six-rank Moeller, and a four-rank Wicks.
- Computer/Listening Lab – available for all music students;
- Recording facilities for live concert recordings as well as professional studio recordings;
- The Center for Experimental Music (CEM), a computer composition laboratory for all aspects of electro-acoustic music production, available for composition students;

Also part of the School of Music complex of buildings are

- Shryock Auditorium: the primary concert space for orchestra, opera, band, and choral concerts, located adjacent to the School of Music; it houses a fifty-eight rank Reuter pipe organ, the principal instrument for recitals and teaching, which is installed in Shryock Auditorium.
- Old Baptist Foundation Recital Hall:

a small chamber music space for more intimate recitals.

Application for Admission

Students interested in pursuing the Master of Music should apply for admission through the SIUC Graduate School application website. <http://gradschool.siu.edu/applygrad/index.html>

The online application system includes a separate School of Music application. All applicants must complete both applications in order to be considered for graduate work at SIUC. The music application is sent directly to the Director of Graduate Studies in Music, along with all supporting materials (transcripts, letters of recommendation, etc.):

The Director of Graduate Studies in Music
 Southern Illinois University - School of Music
 1000 Normal Avenue
 Carbondale, Illinois 62901-4302

In addition to the application materials above, **International students** require additional documents including financial disclosure form, a photocopy of undergraduate diploma, and other materials for attaining a student VISA. Non-English speaking students must also submit a recent TOEFL score.

All forms are provided and explained on the Graduate School application website. Further clarification or additional questions regarding the entire application process may be answered by writing to: gradmus@siu.edu.

Auditioning Process

Each applicant must be assessed by members of the School of Music faculty in order to be accepted into his/her specific discipline. Performers must audition either in person or recording; composers should submit scores and recordings of their compositions; scholars should submit examples of their researched writing. More information can be found on the School of Music website:

<http://cola.siu.edu/music/>

In order to set up an audition, make contact with the specific faculty member in your area, as found on the School of Music website. (See the chart below) You are also encouraged to contact that performer, composer, or scholar, as well as the Director of Graduate Studies in Music, at any time, before or during the application process, if you have area specific questions or concerns.

Assistantships, Fellowships, and Tuition waivers

There are a number of opportunities for graduate students to receive financial assistance with their degree.

Students should apply for Master level fellowships by sending the appropriate application (found on the SIUC Graduate School website) and supporting documentation directly to the Director of Graduate Studies in Music. The annual deadline for receipt of this material is January 1st.

Graduate Assistantships offer students a complete tuition waiver plus a monthly stipend in turn for teaching and/or research assistance in the School of Music. The application is included as part of the specific School of Music application, completed with the SIUC Graduate School application.

However, the deadline for Primary consideration for a GA is February 15th.

There are several additional types of financial assistance available including PROMPT Fellowships, tuition waivers, Excellence Through Commitment Graduate School Scholarships, etc. Information about cost and financial help can be found at:

<http://www.gradschool.siu.edu/cost-aid/index.html>

Additional aid for Master of Music students includes scholarships for string students, given annually by the Southern Illinois Chamber Music Society, and three annual competitions for composition students, The Carl Deis Prize, The Southern Illinois Symphony Orchestra Composition Competition, and the Myktyyn Distinguished Composition Award.

Screening Exams

All incoming students must take screening examinations in Aural Skills, Music Theory, Music History pre-1750, and Music History post-1750. These exams are available for online administration and should be taken as soon as possible after being notified of your acceptance into the program, but before arriving on campus to begin your degree. Students in collaborative piano-vocal accompanying emphasis, opera/musical theater, and performance- vocal emphasis are required to take additional screening examinations in French diction, Italian diction, German diction, and IPA diction. Students in collaborative piano-instrumental accompanying emphasis are strongly encouraged to take the additional screening examinations in diction. These examinations are administered on or before the first day of classes. Incoming students found deficiency in certain areas will be assigned remedial coursework- MUS 399 A-K Graduate Music Review- in aural skills, music theory, music history, diction, or other pertinent areas. All deficiencies must be corrected by taking the appropriate sections of MUS 399 BEFORE registering for graduate level courses in those areas, and it is mandatory to take care of all deficiencies during their first year of the MM program. For each assigned section of Graduate Music Review, the minimum grade to fulfill the deficiency is B or better, with the exception of Graduate Ear Training which requires a grade of C or better. .

Master of Music Curriculum

The curriculum for each MM concentration is slightly different, appropriately focusing on specific aspects of training. Current MM students should follow the curricular guides found below for their specific MM concentration. These guides are also found on the School of Music Website. Any deviations from this should be discussed with your major professor, and then proposed to the School of Music Graduate Committee.

Graduate students self-register each semester, on the SIUC website: <http://www.gradschool.siu.edu/registration/index.html>

Each student should regularly meet with both their major professor and the Director of Graduate Studies in Music to ensure that they are fulfilling all the curricular responsibilities of their specific concentration.

Note: Only courses at the 400 and 500 level count toward the total hour count to complete the curriculum for the Master of Music degree. At least fifteen of the total credit hours must be

at the 500 or above level.

-----Master of Music Curricula-----

PERFORMANCE:

Performance -- Orchestral Instruments Emphasis

MUS 501	3
MUS 502 A or B	2
MUS 440 A-Y (as determined by audition, maximum of 3 hours allowed at 440 level)	
MUS 540 A-Y	6-9
MUS 565 A-H*	2
MUS 595	1
MUS 598	3
MUS 566C or MUS 566D	4
MUS 470, 471, 472, 474, 475, 476, 477, 478 A, 478 B, 573 or 574.	3
MUS 461	3
MUS 472, MUS 479 A-I, MUS 481, MUS 482, MUS 499 or approved graduate music electives	6
TOTAL *Students must take 1 credit in two different semesters to fulfill Chamber Music requirement.	36

Performance -- Piano Emphasis

MUS 501	3
MUS 502 A and B	4
MUS 440Q (as determined by audition, maximum of 3 hours allowed at 440 level)	0-3
MUS 540Q	6-9
MUS 595	1
MUS 598	3
MUS 566K , MUS 565F	1,1
MUS 565 A-H or MUS 566 A-L	1,1
MUS 470, 471, 472, 474, 475, 476, 477, 478 A, 478 B, 573 or 574.	3
MUS 461	3
MUS 472, MUS 479 A-I, MUS 481, MUS 482, MUS 499 or approved graduate music electives	6
TOTAL	36

Performance -- Vocal Emphasis

MUS 501	3
MUS 502A or 502B	2

MUS 470	3
MUS 440P (as determined by audition, maximum of 3 hours allowed at 440 level)	0-3
MUS 540P	6-9
MUS 598	3
MUS 595	1
MUS 566F	4
MUS 401	2
MUS 403	2
MUS 461	3
MUS 479C	2
Approved coaching, theater, dance, or music electives.	2
TOTAL	36

Performance -- Guitar Emphasis

MUS 501	3
MUS 502 A or B	2
MUS 440T (as determined by addition, maximum of 3 hours allowed at 440 level)	0-3
MUS 540T	6-9
MUS 595	1
MUS 598	3
MUS 566H	2
MUS 565 A-H*	2
MUS 470, 471, 472, 474, 475, 476, 477, 478 A, 478 B, 573, or 574	3
MUS 461	3
MUS 472, MUS 479 A-I, MUS 481, MUS 482, MUS 499, or approved graduate music electives	8
TOTAL *Students must take 1 credit in two different semesters to fulfill Chamber Music requirement.	36

Performance -- Orchestral Conducting Emphasis

MUS 501	3
MUS 502 A and B	4
MUS 540W	6
MUS 556	2
MUS 595	1
MUS 598	3
MUS 566D	4

MUS 470, 471, 472, 474, 475, 476, 477, 478 A, 478 B, 573, or 574	6
Graduate independent study in marketing, e.g., MKTG 350 (2) or MKTG 363 (2), MUS 440 A-Y or MUS 540 A-Y (1,1,1), MUS 565B, or approved graduate music electives	7
TOTAL	36

Performance -- Wind Conducting Emphasis

MUS 501	3
MUS 502 A and B	4
MUS 440W	3
MUS 540W	6
MUS 556	4
MUS 595	1
MUS 598	3
MUS 566C	4
From MUS 470, 471, 472, 474, 475, 476, 477, 478 A, 478 B, 573, or 574.	3
MUS 458	2
Applied Music, 440 A-Y or 540 A-Y (1, 1, 1) Or approved graduate music electives	3
TOTAL	36

Performance -- Choral Conducting Emphasis

MUS 501	3
MUS 502 A and B	4
MUS 440W	3
MUS 540W	6
MUS 556	2
MUS 595	1
MUS 598	3
MUS 566F	4
MUS 470, 471, 472, 474, 475, 476, 477, 478 A, 478 B, 573, or 574.	3
MUS 453	2
Applied Music, 440(A-Y) or 540(A-Y) (1, 1, 1) Or approved graduate music electives	5

TOTAL	36
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Concentration: Opera/Music Theater

MUS 501	3
MUS 502 A or B	2
MUS 470	3
MUS 471	3
MUS 440P (as determined by audition, maximum of 3 hours allowed at 440 level)	0-3
MUS 540P	6-9
MUS 598	3
MUS 595	1
MUS 401	2
MUS 402	2
MUS 403	2
Approved theater credits from: THEA 217*, THEA 303A*, THEA 311A*, THEA 317A*, THEA 317B*, THEA 323*, THEA 400, THEA 402, THEA 403A, THEA 403B, THEA 417, THEA 423, THEA 424	5
Approved coaching, theater, dance, or music electives	1
TOTAL	36

*In order to receive graduate credit for these courses, register for THEA 530

Concentration: Music Theory and Composition

MUS 501	3
MUS 502 A and B	4
MUS 480 (as determined by audition, maximum of 3 hours allowed at 480 level)	0-3
MUS 580	6-9
MUS 545	2
MUS 599	5
MUS 595	1
MUS 566 A-L*	4
MUS 478 A or B	3
MUS 406	2
MUS 499, MUS 481 or other approved graduate music electives	3
TOTAL	36

*Third and/or fourth semester(s) perform with the option of serving as “composer-in-residence” [During their second semester in residence, the composition student should formally apply to serve as a “composer-in-residence” with the appropriate ensemble director, it is not mandatory that ensemble directors participate.]

Concentration: Music Education

MUS 501	3
MUS 502 A or B	2
MUS 503	3
MUS 509	3
MUS 484	3
Approved Music Education Electives MUS 440 A-Y, 453, 454, 455, 456A, 456B, 457, 483, 499, 500, 503, 540, A-Y, 550	6*
From MUS 470, 471, 472, 474, 475, 476, 477, 478A, 478B, 479 A-K, 573, 574.	6
Ensemble MUS 566 A-L	4**
Thesis MUS 599 (6) or MUS 595 (1) plus 5 credits of approved music education electives	6
TOTAL	36

*No more than 2 credits of MUS 440 A-Y or 540 A-Y may count toward the Approved Music Education Elective requirement.

**Music education students in residence must participate in a major ensemble every semester in residence. Part-time students may petition to substitute other coursework to fulfill the ensemble requirement.

Concentration: Music History and Literature

MUS 501	3
MUS 502 A and B	4
MUS 599	6
From MUS 470, 471, 472, 474, 475, 476, 477, 478A, 478B, 573 or 574	9
From 566 A-L	4
Approved non-music history graduate music electives	6
MUS 499 MUS 482 MUS 500 or approved graduate music history electives	4
TOTAL	36

In addition to the general requirements for graduation, it is recommended that music history/literature majors have successfully completed two years of a foreign language

(preferably French or German) at the undergraduate level, or take German or French reading as a research tool during their MM program.

Concentration: Piano Education Arts

MUS 501	3
MUS 502 A or B	2
MUS 440Q/540Q	9
MUS 410 A or B	2
MUS 510 A,B,C (3, 3, 3)	9
MUS 479 A or I	2
Electives from: MUS 470, 471, 472, 474, 475, 476, 477, 478A, 478B, 573, and 574;	3
MUS 566 A-L	2
MUS 498	3
MUS 595	1
TOTAL	36

Concentration: Collaborative Piano

(Vocal and Instrumental Accompanying Emphases)

	Vocal	Instrumental
MUS 501	3	3
MUS 502 A or B	2	2
MUS 540Y	12	12
MUS 454	2	2
MUS 470, MUS 471, MUS 472, MUS 474, MUS 475, MUS 476, MUS 477, MUS 478A, MUS 478B, MUS 573, or MUS 574	6 MUS 470 is required	6
MUS 566C, D, E or F	1	1
MUS 479	4 MUS49C (2,2)	4 MUS 479J and MUS 479K
MUS 598A vocal accompanying recital (1 credit each) MUS 598B instrumental accompanying recital (1 credit each)	3 (2 vocal recitals; 1 instrumental recital.)	3 (2 instrumental recital; 1 vocal recital)
MUS 595	1	1
Approved graduate music electives	2	2

TOTAL	36	36
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Creation of the Thesis Committee

In the Fall of the second year, each student should formally create their Thesis Committee. Although the three members of this committee are the student's choice, they must be SIUC faculty with whom the student has had academic contact, and they must agree to serve on this important committee. The student must complete and submit the Thesis Committee Form, signed by the student's choice for Chair of this committee, to the Director of Graduate Studies.

Master of Music Thesis Requirements

Each of the various concentrations of the MM degree have slightly different thesis requirements, chosen from the following, separately or in combination:

- MUS 599: A major written thesis on a topic proposed to and approved by the School of Music Graduate Committee. Composers write a major composition under direction of the student's thesis committee.

- MUS 598: A graduate recital under approval and direction of the student's recital jury, this may be performing, conducting, or directing.

Collaborative Piano students perform three recitals as per the curriculum above.

- MUS 595: A written research paper under the direction of the student's Thesis Committee. Performers write extended program notes to accompany their graduate recital; Composers write extended notes to accompany their major composition thesis.

Research Papers and Theses (including compositions) must be submitted (UPLOADED) to the SIUC Graduate School on or before their posted deadline. For more information, visit: <http://www.gradschool.siu.edu/thesis-dissertation-researchpaper/index.html>.

Final Comprehensive Examinations.

Final examinations are created and administered individually by each student's thesis committee, during the student's final semester, prior to the SIUC Graduate School's deadline. The exams are in two parts:

- (1) an extended written exam, essay style; and
- (2) a one hour oral exam with the student's thesis committee.

Chronology and Forms.

In addition to meeting regularly with the Director of Graduate Studies in Music, students can learn about all expectations in regard to their degree program by reading the "Chronology of Master of Music Procedures" found on the School of Music website. This document contains links to all the necessary forms that are to be submitted during their degree. Links to these forms can be found at:

<http://www.gradschool.siu.edu/about-us/forms.html>.

Courses (MUS)

Courses in this department may require the purchase of music literature and other incidental supplies.

400-1 to 2 (1,1) Performance Techniques. Individual

instruction in any secondary applied field. Designed to provide added depth of preparation for teaching instrumental and vocal music. Restricted to Graduate Music Major. Technology and Instrument Repair/Replacement Fee: \$15/credit hour.

401-1 to 12 (1 to 2 per semester) Opera Workshop. Open to all appropriately experienced singers, actors, dancers, instrumentalists and theater technicians. Study of opera/operetta repertoire and performance techniques. Special approval needed from the instructor.

402-1 to 12 (1 to 2 per semester) Musical Theater Workshop. Open to all appropriately experienced actors, singers, dancers, instrumentalists and theater technicians. Study of musical theater/musical revue repertoire and performance techniques. Special approval needed from the instructor.

403-1 to 16 (1 to 2 per semester) Lyric Theater Ensemble. A select group which performs operatic or musical theater literature, usually in the form of a fully mounted production each semester. May be repeated for credit. Prerequisite: audition or consent of instructor. Technology and Instrument Repair/Replacement Fee: \$15/credit hour.

406-2 Electronic Composition and Sound Synthesis. Principles of acoustics, parameters of music/sound, basic sound synthesis, wave forms and manipulation of wave forms, digital audio and digital audio platforms, audio recording/engineering, microphone types/use, utilizing sample libraries, mixing, and basic mastering.

407-2 Modal Counterpoint. Study of Renaissance contrapuntal techniques. Extensive writing practice, and analysis of stylistic models. Prerequisite: MUS 308 with a C or better.

410A,B-2,2 Piano Pedagogy Practicum. Provides undergraduate and graduate piano pedagogy majors with the opportunity for supervised practice piano teaching. Course activities include lesson-planning, conducting and evaluating studio piano and class piano lessons, and a survey of important educational issues that impact on effective piano teaching. Special approval needed from the instructor.

421-2 Advanced Analysis. Structure, form, and design in music as the coherent organization of all of its factors. Analysis of works chosen from a variety of styles and genres. Prerequisite: MUS 321 with a C or better.

430A-2 Jazz Arranging. Step-by-step approach to jazz arranging and techniques from lead sheet construction through full big band arrangements. Students will write and arrange for combos, trombone section and rhythm, saxophone section and rhythm, and full big band with all projects to be played by student ensembles. Special approval needed from the instructor.

430B-2 Jazz Arranging II. Step-by-step approach to jazz arranging and techniques from lead sheet construction through full big band arrangements. Students will write and arrange for combos, trombone section and rhythm, saxophone section and rhythm, and full big band with all projects to be played by student ensembles. Prerequisite: MUS 430A with a C or higher.

440 A-Y - 1-3 Applied Music. May be repeated for credit as long as passing grade is maintained. Prerequisite: audition or recommendation of applied jury. Students must perform an end of semester jury and be concurrently enrolled in one of the major ensembles. Students enrolled in 1 or 2 credits take one half-hour lesson per week; 3 credits take a one hour lesson per week. Students enrolled in 2 or 3 credits must attend the weekly studio class. Technology and instrument Repair/Replacement

Fee: \$15/credit hour.

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|---------------|--------------------------|
| a. Flute | n. Cello |
| b. Oboe | o. Double Bass |
| c. Clarinet | p. Voice |
| d. Bassoon | q. Piano |
| e. Saxophone | r. Organ |
| f. Horn | s. Harpsichord |
| g. Trumpet | t. Guitar |
| h. Trombone | u. Recorder |
| i. Euphonium | v. Coaching |
| j. Tuba | w. Conducting |
| k. Percussion | x. Musical Theater Voice |
| l. Violin | y. Collaborative Piano |
| m. Viola | |

450-3 Topics in Ethnomusicology. Courses in this series are designed for advanced undergraduate and graduate students in music and related disciplines to the issues, theories, and interdisciplinary research methodologies of ethnomusicology. Restricted to: junior/senior/graduate music major or consent of instructor.

450A-3 Women in Music. (Same as WGSS 450A) Explores the creative contributions of women in music, examining women's participation across a range of genres, cultural/geographic areas, and time periods. Restricted to: junior/senior/graduate music major or consent of instructor.

450B-3 Music and Social Change. Examines music as a force in movements for social change as well as music outside of formally identified movements serving this purpose. Seeks out musical sources and cultural meanings, along with connections between music in movements across time, space, culture, and genre. Restricted to: junior/senior/graduate music major or consent of instructor.

452A-3 Traditions of Uppity Women's Blues. (Same as AFR 452A and WGSS 452A) Examines the tradition of "uppity" women's blues from the so-called "classic" blues singers of the 19th century (Gertrude "Ma" Rainey, Bessie Smith, Ida Cox, etc.) to the contemporary blues of Saffire, Denise LaSalle and others. Explores ways blues women challenge conventions of gender and sexuality, racism, sexism, classism and homophobia. Restricted to: Upper level music major. Special approval needed from department.

452B- Blues and Boogie Woogie Piano Styles. (Same as AFR 452B) Traces the history, culture, and stylistic developments of blues and boogie woogie piano. Explores socio-cultural contexts and examines key players, pieces, and musical styles. Restricted to upper level music major. Special approval needed from the department.

453-2 to 4 (2 per semester) Advanced Topics in Choral Music. Practicum in the selection, rehearsal, and performance of appropriate literature. Study of techniques for achieving proficient performance and musical growth. For experienced teachers and advanced students.

454-2 to 4 (2 per semester) Advanced Topics in Instrumental Music. Practicum in the selection, rehearsal, and performance of appropriate literature. Study of techniques for achieving proficient performance and musical growth. Designed for experienced teachers and advanced students.

455-2 to 4 (2 per semester) Advanced Topics in Elementary

School Music. Practicum in the selection and use of materials for the elementary school program. Study of techniques for achieving balanced musical growth. For experienced teachers and advanced students.

456 A,B-4 (2,2) Music for Exceptional Children. (a) Theories and techniques for therapeutic and recreational use of music with physically and mentally handicapped children. Includes keyboard, autoharp, guitar and tuned and untuned classroom instruments. (b) Applications for the gifted, emotionally disturbed, and culturally disadvantaged child. Take in sequence.

457-2 Conducting the Middle/High School Band. This course is designed to further develop the skills learned in Introduction to Conducting and Advanced Conducting. Emphasis will be placed on advanced conducting techniques and score study. Topics will include middle/high school band literature, error detection, rehearsal planning, and teaching techniques. Prerequisites: MUS 316, MUS 317, and/or MUS 318.

458-2 Survey of Wind Literature. The study of wind literature from its beginning in the music of Gabrieli through the classical wind serenades of Mozart to the composers of today. The course will include music written for wind chamber groups, as well as music for wind ensemble and the traditional concert band. Restricted to junior/senior/graduate music major or consent of instructor.

461-3 Applied Music Pedagogy. Specialized problems and techniques employed in studio teaching of any particular field of music performance. Study of music literature appropriate for the various levels of performance. Opportunity, as feasible, for supervised instruction of pupils. Meets with appropriate instructor, individually or in groups. Special approval needed from the instructor.

470-3 History of Opera. The development of the music, libretti, and staging of opera from the late Renaissance to the present. Prerequisite: MUS 357B, or consent of instructor.

471-3 History of Musical Theater. The development of the music, book, lyrics and staging practices of musical theater from its late 19th century beginnings to present, with a detailed study of selected contributors and their works. Restricted to: BFA or MM Opera/ Music Theater majors only, or consent of instructor.

472-3 Chamber Music Literature. A study of literature for the principal types of chamber music groups. Special approval needed from the instructor.

474-3 Survey of Jazz History. In-depth study of the history of jazz through examination of historical lineage and perspective, recorded output and important stylistic characteristics of each major period. Biographical backgrounds of major composers and performers will be considered as they contribute to the evolution of musical styles. Prerequisite: none.

475-3 Baroque Music. The development of vocal and instrumental music in the period 1600-1750, from Monteverdi to Bach and Handel. Oratorio and Cantata, the influence of opera, sonata, suite and concerto. Prerequisite: MUS 357B with a grade of C or better, or graduate standing.

476-3 Classical Music. Development of the sonata, symphony, concerto, and chamber music in the 18th and early 19th centuries, with emphasis on the music of Haydn, Mozart and Beethoven. Prerequisite: MUS 357B with a grade of C or better,

or graduate standing.

477-3 Romantic Music. Development of the symphony and sonata forms, chamber music, and vocal music in the 19th and early 20th centuries. Rise of nationalism and impressionism. Prerequisite: MUS 357B with a grade of C or better, or graduate standing.

478A-3 Modern Music I. Examine important works and figures from Western Music in the first half of the 20th Century. Topics included will be Atonality, Serialism, Impressionism, Expressionism, Nationalism, Ballet and Theater Music, Neo-Classicism, Experimentalism, and Jazz. A strong emphasis will be placed on the social and political context in which the music was created. Prerequisites: MUS 375B with a grade of C or better or instructor consent.

478B-3 Modern Music II. Examine important works and figures from Western Music in the second half of the 20th Century. Included will be atonality, serialism, avant-garde, minimalism, electronic music, experimental instruments and indeterminacy. Emphasis placed on the social, economic and political context. Students will examine the compositional philosophies and techniques of the era. Prerequisite: MUS 357B with grade of C or better or instructor consent.

479 A-G,I-K-2 to 8 (2 per topic) Solo Performance Literature. Topics presented will depend upon the needs of students and upon instructors schedules. (a) Piano Literature I, including an introductory study of harpsichord music; (b) Organ Literature, in relation to the history of the instrument; (c) Art Song, topics to rotate over a 3-year sequence, may be repeated for up to 6 credit hours; (d) Guitar and Lute Literature; (e) Solo String Literature; (f) Solo Wind Literature; (g) Percussion Literature; (i) Piano Literature II; (j) Instrumental Sonata Literature for Pianists; (k) Piano Chamber Music Literature. Special approval needed from the instructor.

480-2-4 Advanced Composition. Original composition involving the larger media. Individual instruction. Prerequisite: approval of composition jury. Technology and Instrument Repair/Replacement Fee: \$15/credit hour.

481-1 to 4 Special Topics in Music Theory and Composition. An advanced seminar exploring specialized areas in music theory and composition. An emphasis on current trends, composing, score study, and analysis. Prerequisite: MUS 321 and MUS 322 or prior consent of the instructor.

482-1 to 4 Readings in Music History and Literature. Assigned readings and reporting of materials pertaining to a particular phase of history or literature. Approximately three hours preparation per week per credit. Prerequisite: MUS 357A and B, or prior consent of instructor.

483-1 to 4 Readings in Music Education. Assigned readings and reporting of materials pertaining to a particular phase of music education. Approximately three hours preparation per week per credit (adjusted for shorter sessions). Special approval needed from the instructor.

484-3 Trends in Music Education. Evolving issues important to the music educator.

498-2 to 4 Recital. Graduate students register for three credits. Preparation and presentation of a full solo recital in any applied field. The recital program should contain approximately 50 minutes of music. Prerequisite: completion of at least three credits in 440 in the appropriate applied field and instructor

approval. The recital Jury certifies the acceptability of the recital program and the student's preparedness 2-3 weeks prior to the scheduled public recital. The Recital Jury submits the public recital grade to the Director of Graduate Studies.

499-1 to 8 Independent Study. Original investigation of selected problems in music and music education with faculty guidance. Project planned to occupy approximately three hours preparation per week per credit (adjusted for shorter sessions). Not more than three hours toward 36 required for graduate degree. Special approval needed from the selected instructor.

500-1 to 6 Independent Investigation. An opportunity for the graduate student to investigate at an advanced level special interests outside the scope of normal course offerings. The student will select a member of the graduate faculty to guide and evaluate the work. Not more than three hours toward 36 required for graduate degree. Special approval needed from the selected instructor and student's graduate advisor.

501-3 Music Bibliography and Research. Bibliographic materials for graduate study in music theory, history, education, and music performance. Practical experience in research techniques and scholarly writing style. Recommended to be taken during the first semester of graduate study. Required of all degree programs.

502A-2 Analytic Techniques A. Study of the analytic techniques of Heinrich Schenker through analysis of representative works from the common practice period. Prerequisite: MUS 321 and/or consent of instructor. Restricted to graduate standing in music.

502B-2 Analytic Techniques B. Study of posttonal music theories-including Allen Forte's pitch-class set theory and twelve-tone theory-through analysis of representative 20th and 21st century works. Prerequisite: MUS 322 and/or consent of instructor. Restricted to graduate standing in music.

503-3 Scientific Evaluation and Research in Music. Quantified research concepts and vocabulary; measurement theory and techniques for evaluating and testing musical aptitude and achievement; investigation of acoustical perception; survey of current scientific research in music. A research project is required.

509-3 History and Philosophy of Music Education. The evolution of school music and its changing relationship to the individual, to society and to the school curriculum.

510A-3 Piano Pedagogy Seminar-Piano Technique. Provides an in-depth study of the three classic texts on the subject of piano technique and prepares students to deal with important aspects of piano technique in piano teaching.

510B-3 Piano Pedagogy Seminars-Piano Literature. An extensive survey of baroque, classical, romantic and contemporary piano literature designed specifically to meet the needs of those pursuing professional careers as piano teachers.

510C-3 Piano Pedagogy Seminars-Piano Music Analysis. Details the analytic and problem-solving techniques of piano performance study that are fundamental for teaching piano students of all ages and abilities.

535-2 Contemporary Idioms. An analysis of major compositional techniques since 1945. Prerequisite: MUS 502B or consent of instructor.

540 A-Y 1-3 Applied Music. May be repeated for credit as long as passing grade is maintained. Prerequisite: audition or recommendation of applied jury. Students must perform an

end of semester jury and be concurrently enrolled in one of the major ensembles. Students enrolled in 1 or 2 credits take one half-hour lesson per week; 3 credits take a one hour lesson per week. Students enrolled in 2 or 3 credits must attend the weekly studio class. Technology and instrument Repair/Replacement Fee: \$15/credit hour.

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|---------------|--------------------------|
| a. Flute | n. Cello |
| b. Oboe | o. Double Bass |
| c. Clarinet | p. Voice |
| d. Bassoon | q. Piano |
| e. Saxophone | r. Organ |
| f. Horn | s. Harpsichord |
| g. Trumpet | t. Guitar |
| h. Trombone | u. Recorder |
| i. Euphonium | v. Coaching |
| j. Tuba | w. Conducting |
| k. Percussion | x. Musical Theater Voice |
| l. Violin | y. Collaborative Piano |
| m. Viola | |

545-2 Pedagogy of Music Theory. An orientation to the philosophy of theory with application to teaching techniques. Special approval needed from the instructor.

550-2 School Music Administration and Supervision. Study of the objectives and processes of music instruction. Administration roles in developing the means and ends of music instruction, and techniques employed for the improvement of instruction.

556-2 to 4 (2,2) Advanced Conducting. Individual or group study with appropriate instructor of choral, orchestral, or band literature. Practice in score reading, baton technique and interpretation. Opportunity to rehearse and conduct ensembles when feasible. Prerequisite: completion of an undergraduate conducting course. Restricted to graduate standing in music, or consent of instructor.

565 A - H -1 to 4 (1 per topic) Chamber Music. Groups of 2 to 16 performers as organized and sponsored by individual faculty members. Includes duo-piano teams and piano in combination with other performers. Regular weekly rehearsals of appropriate music and public performance as feasible. Each subject may be repeated up to 2 hours. (a) Vocal; (b) String; (c) Woodwind; (d) Brass; (e) Percussion; (f) Keyboard; (g) Guitar; (h) Contemporary. Technology and instrument repair/replacement fee: \$15.

566 A-L -1 to 12 (1 or 2 per semester) Ensemble. Participation required each semester enrolled (summer excepted) in one or more of the ensembles listed below. In addition, students may elect participation in other regularly scheduled ensembles. One credit per group; maximum of two credits for concurrent participation in two groups. (a) Marching Salukis. (b) Symphonic band. (c) Concert wind ensemble. (d) Symphony. (e) Choral union. (f) Concert choir. (g) Chamber singers. (h) Guitar ensemble. (i) Opera workshop (j) Jazz ensemble. (k) Accompanying Lab. (l) Chamber Music-Piano. Technology and Instrument Repair/Replacement Fee: \$15/credit hour.

573-3 Medieval Music. Music of the medieval world; Gregorian chant; the Tropes; secular songs of the troubadours and trouveres; the rise of polyphony; Ars Antiqua; organum and conductus; Ars Nova; Dunstable and English descant up to about 1450; types of notation. Restricted to non-music majors:

Special approval needed from the instructor.

574-3 Renaissance Music. Burgundian and Netherlands music from 1450 and its spread; Isaac and Josquin; 16th Century polyphony in France, Germany, Spain, and England; the rise of music for instruments and for solo voices. Restricted to non-music majors: Special approval needed from the instructor.

580-3 Graduate Composition. Composition in the larger forms for solo and ensemble performance. Prerequisite: Approval of composition jury. Technology and Instrument Repair/Replacement Fee: \$15/credit hour.

595-1 Research Paper. A written report presenting the history and style of works performed in the graduate recital, MUS 598 or 498, or other topic relating to the student's principal performing area or independent study project. Prerequisite: MUS 501 and approval of topic by the student's Graduate Faculty Committee.

598-3 Graduate Recital. Preparation and presentation of a full solo recital in any applied field. The recital program should contain approximately 60 minutes of music. Prerequisite: completion of at least three credits in 540 in the appropriate field and approval of instructor. The Recital Jury certifies the acceptability of the recital program and the student's preparedness 2-3 weeks prior to the scheduled public recital. The Recital Jury submits the public recital grade to the Director of Graduate Studies.

598A 1 to 3 (1 or 2 per semester) Graduate Recital, CP Vocal. Preparation and presentation of a full recital with a vocalist. Restricted to Collaborative Piano majors only. Approval of performance jury. The performance jury certifies the acceptability of the completed recital and the grade to the graduate committee.

598B 1 to 3 (1 or 2 per semester) Graduate Recital, CP Instrumental. Preparation and presentation of a full recital with an instrumentalist. Restricted to: Collaborative Piano majors only. Approval of performance jury. The performance jury certifies the acceptability of the completed recital and the grade to the graduate committee.

599-2 to 6 Thesis. An intensive written study in the history, theory, teaching or philosophy of music; or the manuscript and parts (with tape recording when feasible) of a substantial musical composition or series of compositions accompanied by an analytical or explanatory document. Graded *S/U* or *DEF*. Prerequisite: MUS 501 and prior approval of topic or proposal by thesis director and graduate committee in music.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Pharmacology and Neuroscience

www.siumed.edu/pharm/

lmoss@siu.edu

SCHOOL OF MEDICINE

Graduate Faculty:

Arai, Amy C., Professor, Ph.D., (Springfield), Chiba University, 1987; 1999. Molecular and pharmacological modulation of AMPA-type glutamate receptors and its impact on synaptic physiology.

Caspary, Donald M., *Distinguished Research Professor*, Ph.D., (Springfield), New York University, 1971; 1973. Sensory physiology, neurophysiology, neuroanatomy, comparative physiology.

Copello, Julio A., Associate Professor, Ph.D., (Springfield), National University of La Plata, 1989; 2005. Physiological and pharmacological modulation of ryanodine receptors/calcium release channels and its impact on excitation-contraction coupling of skeletal muscle and heart.

Cox, Brandon, Assistant Professor, Ph.D., (Springfield), Georgetown University, 2008; 2013. Mechanism of auditory hair cell regeneration in the neonatal mouse cochlea and the postnatal maturation of the cochlea.

Elble, Randolph C., Associate Professor, Ph.D., (Springfield), Indiana University, 1986; 2005. Tumor suppression in breast cancer by CLCA family of chloride current regulators.

Faingold, Carl L., Distinguished Professor and *Chair*, Ph.D., (Springfield), Northwestern University, 1970; 1972. Convulsive seizure mechanisms and effects of anticonvulsants; pharmacological alterations of cerebral evoked potentials.

Premkumar, Louis S., Professor, Ph.D., (Springfield), Australian National University, 1992; 1999. Molecular neurobiology, molecular mechanism(s) underlying pain perception; structure and function of ion channels.

Ramkumar, Vickram, Professor, Ph.D., (Springfield), University of Maryland, 1986; 1992. Molecular pharmacology of adenosine receptors in cardiovascular system and central nervous systems.

Rybak, Leonard P., Professor, M.D., Ph.D., (Springfield), University of Minnesota, 1973; 1981. Investigation of mechanisms controlling ionic composition and resting potentials in the peripheral auditory apparatus using chinchilla model.

Tischkau, Shelley A., Associate Professor and *Director*, Ph.D., (Springfield), University of Illinois at Urbana-Champaign, 1995; 2007. Exploring molecular and neurological bases that underlie whole animal physiological processes, neurotoxicity, circadian rhythms and environmental toxicology.

Toth, Linda A., Professor, Ph.D., D.V.M., (Springfield), University of Pittsburgh, 1980; Purdue University, 1986; 2000. Sleep, genetics, neuroimmunology.

Turner, Jeremy, Assistant Professor, Ph.D., (Springfield), Northern Illinois University, 1999; 2002. Age-related hearing loss, tinnitus, animal models of hearing loss.

Graduate courses of study leading to the Master of Science and Doctor of Philosophy degrees in Pharmacology and Neuroscience are offered by Southern Illinois University School of Medicine, Department of Pharmacology. Course offerings in the graduate

program have been designed so that graduate students may acquire a broad basic knowledge as well as research experience in different areas of Pharmacology and Neuroscience. Graduate students may choose from a diversity of specializations when selecting a research advisor and a research topic.

The minimum requirements for admission to an advanced degree program in Pharmacology and Neuroscience are that all students must have an undergraduate degree in one of the biological sciences. Students may be admitted with a deficiency in this prerequisite, but it must be remedied at an accredited university that is approved by the Graduate School prior to completion of PHRM 550A and B. Students with undergraduate training in related areas, such as chemistry, physics, mathematics, computer science, psychology, or engineering are strongly encouraged to consider graduate work in Pharmacology and Neuroscience.

Unrestricted admission into the master's program requires an undergraduate grade point average (GPA) of 3.0 ($A = 4.0$). For unrestricted admission into the doctoral program, a GPA of 3.25 ($A = 4.0$) on all course work is required. Requirements are described in the sections, for a Master of Science Degree in Pharmacology and Neuroscience" and for a Doctoral Degree in Pharmacology and Neuroscience.

Each applicant must submit directly to the *Department of Pharmacology*:

1. A completed application, including a nonrefundable \$65.00 application fee that must be submitted with their application for Admission to Graduate Study in Pharmacology and Neuroscience. Applicants must pay this fee by credit card.
2. Original official transcripts for all undergraduate and graduate coursework sent directly from each university or college attended by the applicant.
3. Copies of all diplomas.
4. A Career Statement (250 words or less) describing the career path that the applicant intends to pursue upon completion of the graduate study.
5. A Statement of Area of Research Interest (250 words). This statement should include the names of 2-3 Pharmacology Department faculty members whose research interests are most aligned with those of the applicant, as well as specific reasons for this selection. The faculty research interests can be found on the Department of Pharmacology Website.
6. Scores of the Graduate Record Examination (GRE) sent directly from Education Testing Service.
7. Three letters of recommendation from faculty familiar with the applicant's potential.
8. A copy of the TOEFL scores (international students only) sent directly to the Department of Pharmacology in Springfield, as well as the official scores sent directly from the ETS®.
9. A resume or curriculum vitae.
10. A copy of current passport.
11. A copy of current Visa.

Equivalent course work completed at other institutions or in other collegiate units may be substituted for certain course requirements for graduate course work in Pharmacology and Neuroscience if approved by the Pharmacology and Neuroscience Graduate Program Committee and the Graduate School.

Performance Requirements to Maintain Student Status

Master's Degree. An overall GPA of 3.0 ($A = 4.0$) in all graduate work in the program is required to remain in the program. Any grade below *B* in a Pharmacology and Neuroscience core course must be compensated for by retaking the course and earning an *A* or *B* grade.

Doctor of Philosophy Degree. An overall GPA of 3.0 ($A = 4.0$) in all graduate work in the program is required to remain in the program. Any grade received below *B* in a Pharmacology and Neuroscience core course must be compensated for by retaking the course and earning grade of *B* or above.

Financial Assistance

The Pharmacology and Neuroscience Graduate Program offers financial assistance that includes tuition waivers. Research assistantships and departmental fellowships are available; application for this support is made directly to the Department of Pharmacology. The Graduate School governs limits on support.

Graduate students should be aware that renewal of support in the form of a research assistantship or fellowship is contingent upon satisfactory performance evaluations. Performance is documented in an annual progress report and is evaluated by the student's advisor and the Graduate Program Committee. Failure to meet the requirements may lead to termination of support. The performance evaluation considers both assigned duties relevant to graduate assistantships and progress in coursework and research.

Curriculum Requirements Common to the Master's and Ph.D. Degrees in Pharmacology and Neuroscience

All graduate students are required to complete formal course work in two areas: (1) core courses and (2) electives.

The core courses are PHRM 501, 500 (Introduction to Seminar, Pharmacology Seminar; all graduate students are required to participate every Fall and Spring semester), PHRM 550A and B (Principles of Pharmacology), PHRM 577 (Neuroscience). In addition doctoral students are also required to successfully complete PHRM 530 (Advanced Pharmacology and Neuroscience). In accordance with the graduate school, maximum coursework for full-time graduate students is up to 15 hours per semester; 12 hours is considered average; 9 hours is the minimum. For a graduate student with a half-time assistantship; up to 15 hours per semester is the maximum; 12 hours is considered average; 8 hours is the minimum. After admitted into candidacy 6 hours is the minimum.

All graduate students must acquire training in the use of appropriate research tool(s) as required by the Graduate School and determined by the graduate student's thesis/dissertation committee. All students are required to attain competence

in PHRM 540. (Responsible Conduct in Research) Students are also required to complete research tools, at least two for doctoral students and at least one for master's students.

Students may fulfill the requirements for a research tool by taking any of the following courses: PHRM 552 (Statistics), MBMB 504 (Research Methods), or PHRM 551 (Methods in Pharmacology). Students may also attain competence by formal training, or by demonstrating competence in another manner acceptable to the graduate student's thesis/dissertation committee.

An advisory system in Pharmacology and Neuroscience will help students in planning their program. Upon their admission to the Master's or Doctoral program, the Pharmacology and Neuroscience Graduate Program Director will advise students until the student chooses a research advisor. The programs outlined by students, their advisors and their thesis/dissertation committees are subject to approval by the Pharmacology and Neuroscience Graduate Program Committee. The choice of advisor and the formulation of the thesis/dissertation committee is an important step and should be carefully considered. Students are to choose a research advisor immediately after completion of core coursework (including required research tools and PHRM 551) and prelims.

As soon as a graduate student has selected a research advisor, a thesis/dissertation committee should be formed. The thesis committee for a student in the Master's program will consist of a minimum of four members: the student's research advisor (chair), two faculty members from the Department of Pharmacology and one faculty member from an outside department. The dissertation committee for a student in the Doctoral program will consist of a minimum of five members: the student's research advisor (chair), two or three faculty members from the Department of Pharmacology, and one or two faculty members from outside the department. Members of this committee should be able to contribute significantly in the area of the student's research program. The student's research advisor, acting through the Graduate Program Director and Chair of the Department of Pharmacology, will request approval of this committee from the Dean of the Graduate School. The Chair of the Department of Pharmacology and the Graduate Program Director are ex-officio members for all thesis/dissertation committees of which they are not formal members.

Requirements for a Master of Science Degree in Pharmacology and Neuroscience

1. A minimum of two-years of full-time study (1 year in residence) is required for a master's degree.
2. A total of 30 semester hours at the 400 and 500 level is required for a master's degree. At least 15 of these hours must be in 500-level courses, 6 hours which should be of PHRM 599 (Thesis Research).
3. A written comprehensive examination must be passed with at least a grade of *B*. It will be prepared, conducted and evaluated by the Pharmacology and Neuroscience Graduate Program Committee and will be given upon completion of the major core course work. This examination will become a part of the student's permanent file.

4. Before significant research has begun, a thesis plan is required. The thesis plan will be presented and discussed in an informal meeting with thesis committee members and interested faculty. The cover sheet for the graduate student's thesis plan must be signed by all members of the student's thesis committee and filed with the graduate program director.
5. A thesis must be completed in the student's research area of interest and receive approval of the student's thesis committee. The thesis is expected to be a competent, original research project carried out in a selected area under the research advisor's supervision. It should include a statement of the problem, an adequate review of literature, a careful analysis of results by whatever appropriate methods and an interpretation of the findings. The student must submit a preliminary draft of the thesis to the research advisor at least ten weeks prior to graduation. A corrected copy must be submitted to other members of the thesis committee no later than eight weeks before graduation.
6. Results of the thesis research must be defended in a pharmacology seminar which must be announced at least two weeks in advance by sending out proper notices. Immediately following the seminar, an oral examination will be conducted by the student's thesis committee. Any member of the university community may attend this examination and may participate in the questioning and discussion, subject to reasonable time limitations imposed by the committee chair. Only committee members may vote or make recommendations concerning acceptance of the thesis and the oral examination.
7. The student will be recommended for the degree if members of the student's thesis committee judge both the thesis and the performance at the oral examination to be satisfactory. If approved, a thesis approval form will be completed, signed by the student's major research advisor and the chair of the Department of Pharmacology, and transmitted to the Graduate School. The oral examination may be repeated once, no sooner than three months after the first examination. A second failure will result in dismissal from the Pharmacology and Neuroscience Graduate Program.
8. Each student is required to have 6 semester hours of PHRM 599, Thesis Research. Each student who has completed all course work and registered for the minimum of thesis research hours is required to register in PHRM 601 (Continuing Enrollment) until completion of the degree.
9. The student is responsible for electronically submitting the thesis to the Graduate School. The student is responsible for submitting one bound copy to the graduate program curriculum office and one bound copy to the student's research advisor at least three weeks prior to graduation.
10. Below is a representative schedule for completion of the requirements for the Master's Degree in Pharmacology and Neuroscience. Students are strongly encouraged to begin research as soon as possible by taking PHRM 590 (Readings or Research in Pharmacology). In addition to

the core courses, the following elective courses will be offered. Students should take at least one elective course.

Following Elective courses:

Credits:

PHRM 590	Readings or Research in Pharmacology(entire year)	1-24
MBMB 530	Molecular and Cellular Biology (Spring)	3
PHRM 560	Geriatric Pharmacology	3
PHRM 565	Principles of Toxicology	3
PHRM 577	Neuropharmacology	3
MBMB 555	Cardiovascular Pharmacology	3
MBMB 560	Molecular Oncology	3
Or other 500 level courses		

Research Tools:

PHRM 552	Applied Statistics	3
MBMB 504	Research Methods (Fall)	3
PHRM 551	Methods in Pharmacology	4
PHRM 540	Responsible Conduct of Research	1

First Year

Credits

Fall Semester

PHRM 550A	Principles of Pharmacology	4
PHRM 577	Neuroscience	4
PHRM 501	Introduction to Seminar	1
MBMB 504	Research Methods	3

Total	12
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Spring Semester

PHRM 550B	Principles of Pharmacology	4
PHRM 551	Methods of Pharmacology	4
PHRM 590	Readings or Research in Pharmacology	2
PHRM 501	Introduction to Seminar	1
MBMB 530	Molecular and Cellular Biology	3

Total	14
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Summer Session

Choose Advisor and form thesis committee

PHRM 590	Readings or Research in Pharmacology	6
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Total	6
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Preliminary Examination - Written Comprehensive Exam

Second Year

Credits

Fall Semester

PHRM 501	Introduction to Seminar	1
PHRM 552	Applied Statistics	3
PHRM 590	Readings or Research in Pharmacology	4
HRM 599	Thesis Research	3
PHRM 540	Responsible Conduct of Research	1

Total	12
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Spring Semester

PHRM 501	Introduction to Seminar	1
PHRM 590	Readings or Research in	

	Pharmacology	8
PHRM 599	Thesis Research	3
	<i>Thesis Defense</i>	

Total	12
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SUMMARY OF REQUIREMENTS FOR MASTER OF SCIENCE DEGREE

1. Achievement of a grade point average of at least a 3.0 ($A = 4.0$)
2. Completion of a research tool as required by the Graduate Program and the thesis committee
3. Comprehensive written exam of course work
4. Informal thesis proposal presentation with thesis committee
5. Interim meeting with thesis committee to review progress
6. Submission of thesis to research advisor (10 weeks prior to graduation)
7. Corrected thesis to thesis committee (8 weeks prior to graduation)
8. Announcement of thesis defense (4 weeks prior notice)
9. Oral Defense of thesis
10. Submission of approved thesis to Graduate School (2 copies), Graduate Program Director (1 copy), and research advisor (1 copy) 3 weeks prior to graduation
11. Submission of department clearance form
12. All theses will be electronically submitted

Requirements for a Doctor of Philosophy Degree in Pharmacology and Neuroscience

1. Students entering the Ph.D. program in Pharmacology and Neuroscience should meet the minimum requirements listed for the Master's degree program. Students entering the doctoral program in Pharmacology and Neuroscience may be admitted directly from a master's program.
2. The Accelerated Entry (from a master's program) is designed for students who make an early commitment to pursuing a doctoral degree. The Pharmacology and Neuroscience Graduate Program recommends this option after the student's credentials, eligibility and performance have been reviewed. To be eligible for this option: (1) the student must have attained a 3.25 ($A = 4.0$) GPA in graduate course work, (2) the student must have successfully completed the core courses with a grade of B or better and (3) a research advisor with whom the student will work toward his/her degree should submit a letter of recommendation attesting to the student's ability and potential to perform doctoral research. Approval of the review must be given by the Department of Pharmacology faculty and chair. The Chair of the Department will then request from the Graduate School a waiver of the master's degree or master's equivalency before entry into the doctoral program. The student's research advisor and the Graduate Program Committee will establish specific course work requirements for the Ph.D. degree in accordance with the requirements of the program.

3. The Ph.D. degree may not be conferred fewer than six months nor more than five years after admission to candidacy, except upon approval of the Dean of the Graduate School. The student is admitted to the Ph.D. candidacy after having completed the residency requirement, the research tools requirement and the comprehensive written preliminary examination.

4. A comprehensive written preliminary examination of course work must be passed with a grade of B or better. It will be prepared, conducted, and evaluated by the Pharmacology and Neuroscience Graduate Program Committee and will be given after completion of the core courses, typically during the summer session. This examination will become a part of the student's permanent file. The preliminary examination may be repeated only once, no sooner than three months after the initial examination. Most course work should be completed prior to this examination, but this examination should precede the greater part of the dissertation research.

5. A dissertation proposal is required before the student begins significant research. The dissertation proposal will be presented as a Pharmacology seminar. Immediately following this seminar, the proposal will be defended orally before the student's dissertation committee. The cover sheet for the graduate student's dissertation committee must be signed by all members of the student's dissertation committee and filed with the Graduate Program Director. The student is required to meet formally with the dissertation committee at least once between defense of the proposal and the dissertation defense. The purpose of this interim meeting is to review progress and to modify the planned experiments, if deemed necessary based on assessment of data collected as of that date. Results of the dissertation research should be published in peer-reviewed journals with the doctoral candidate as first author. The dissertation defense presentation will occur no earlier than one year after the dissertation proposal defense and after at least one paper has been submitted for publication. The dissertation is expected to be a competent, original research project that will make significant contribution to the body of scientific knowledge. As such, it should be of sufficient quality to merit publication in a peer-reviewed journal. It should include a statement of the problem, an adequate review of literature, a careful analysis of results by whatever methods are appropriate, and an interpretation of the findings.

6. Students must have at least one paper submitted for publication and are encouraged to obtain two or more publications from the graduate research work. The student must delay the defense until this requirement is fulfilled.

7. The residency requirement for the doctorate must be fulfilled after admission to the doctoral program and before formal admission to doctoral candidacy. The residency requirement is satisfied by completion of 24 semester hours of graduate credit on campus as a doctoral student within a period not to exceed 4 calendar years. A doctoral student will be permitted to count no more than 6 hours of

Dissertation Research towards achieving the 24 semester hour residency requirement. To meet the residency requirement, students may enroll in any other course that they have not taken that meets with the approval of their advisor and dissertation committee, e.g. any formal departmental or non-departmental courses and PHRM 590 (Readings or Research in Pharmacology).

8. The Graduate School requires completion of the residency requirement before making application to candidacy. Admission to candidacy is granted by the Dean of the Graduate School upon recommendation of the student's dissertation committee or the Graduate Program after the student has fulfilled the residency requirement for the doctoral degree, passed the comprehensive written preliminary examination and met the research tool requirement. The candidate must fulfill all degree requirements within a five-year period after admission to candidacy; otherwise the student may be required to take another preliminary examination and be admitted to candidacy a second time.
9. After admission to candidacy, the student must complete 24 hours of dissertation credit PHRM 600 (Dissertation Research) complete the dissertation research project and prepare the dissertation document to meet the requirements of the dissertation committee and the Graduate School. A student who has completed all formal course work, dissertation and candidacy credit requirements but has not completed and defended the dissertation must register for PHRM 601 (Continuing Enrollment) until completion of the degree.
10. A preliminary draft of the dissertation should be given to the research advisor at least ten weeks prior to graduation; a corrected copy should be submitted to other committee members no later than eight weeks before graduation.
11. Results of the dissertation research must be defended in a Pharmacology seminar which must be announced at least two weeks in advance by sending out proper notices. Immediately following the Pharmacology Seminar, a final oral examination will be conducted covering the dissertation subject and other discipline related materials. Any member of the university community may attend the final oral examination and may participate in the questioning and discussion, subject to reasonable time limitations imposed by the committee chair. Only members of the committee may vote or make recommendations concerning acceptance of the dissertation and final examination. A student will be recommended for the degree if members of the dissertation committee judge both the dissertation and the performance at the final examination to be satisfactory. If approved, a dissertation approval form will be completed, signed by the student's major research advisor, the Chair of the Department of Pharmacology and submitted to the Graduate School. The examination may be repeated once, no sooner than three months after the first examination. Failure of the second examination will result in dismissal from the

Pharmacology and Neuroscience Graduate Program.

12. The student is responsible for electronically submitting the dissertation to the Graduate School. The student is responsible for submitting one bound copy to the graduate program curriculum office and one bound copy to the student's research advisor at least three weeks prior to graduation.
13. Below is a representative schedule of the requirements for the Ph.D. degree in Pharmacology and Neuroscience (accelerated entry from master's course). Note that alternative scheduling is available for those students who already have a Master of Science degree in Pharmacology and Neuroscience. In addition to the core courses, the following advanced and elective courses will be offered. Students should take two advanced pharmacology courses and one elective course. Students are also strongly encouraged to start research as soon as possible by taking PHRM 590 (Readings or Research in Pharmacology).

Following Elective courses

Credits:

PHRM 590	Readings or Research in Pharmacology (Entire year)	1-24
MBMB 504	Research Methods (Fall)	3
MBMB 530	Molecular and Cellular Biology (Spring)	3
PHRM 574	Neuropharmacology	3
PHRM 555	Cardiovascular Pharmacology	3
PHRM 560	Geriatric Pharmacology	3
PHRM 565	Principles of Toxicology	3
MBMB 560	Molecular Oncology	3

Research Tools:

PHRM 552	Applied Statistics	3
MBMB 504	Research Methods (Fall)	3
PHRM 551	Methods in Pharmacology	4
PHRM 540	Responsible Conduct in Research (Fall)	1

First Year

Credits

Fall Semester

PHRM 550A	Principles of Pharmacology	4
PHRM 577	Neuroscience	4
MBMB 504	Research Methods	3
PHRM 551	Methods in Pharmacology	4
PHRM 501	Introduction to Seminar	1

Total		16
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Spring Semester

PHRM 550B	Principles of Pharmacology	4
PHRM 530	Advanced Pharmacology and Neuroscience	3
PHRM 590	Research in Pharmacology	2
PHRM 501	Introduction to Seminar	1
MBMB 530	Molecular and Cellular Biology	3

Total		13
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Summer Session

*Preliminary Exam**Choose Advisor and form Dissertation Committee*

PHRM 590	Readings or Research in Pharmacology	6
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Total		6
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Second Year**Credits****Fall Semester**

PHRM 552	Applied Statistics	3
PHRM 590	Readings or Research in Pharmacology	5
PHRM 600	Dissertation Research	3
PHRM 501	Introduction to Seminar	1

Total		12
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Spring Semester

PHRM 501	Pharmacology Seminar	1
PHRM 590	Readings or Research in Pharmacology	8
PHRM 600	Dissertation Research	3

Admission to Candidacy when eligible

Total		12
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Summer Session

PHRM 600	Dissertation Research	6
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Total		6
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After Second Year**Credits****Fall Semester**

PHRM 600	Dissertation Research	9
PHRM 500	Pharmacology Seminar	1

Total		10
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Spring Semester

PHRM 600	Dissertation Research	11
PHRM 500	Pharmacology Seminar	1

Completion of residency requirements for Ph.D.

Total		12
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Summer Session

PHRM 600	Dissertation Research	6
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Total		6
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SUMMARY OF REQUIREMENTS FOR DOCTOR OF PHILOSOPHY DEGREE

1. Achievement of a grade point average of at least 3.00 (A = 4.0)
2. 24 semester hours residency
3. Completion of research tools required by Graduate Program and Dissertation Committee
4. Comprehensive written preliminary exam of course work
5. Completion of 4 semester hours of PHRM 501 with a grade of *B* or better
6. Admission to candidacy
7. Oral defense of dissertation proposal
8. Interim meeting with dissertation committee to review progress
9. Submission of at least one manuscript, based on the student's

dissertation research, for publication to a peer-reviewed journal.

10. Submission of dissertation to research advisor with copies of publications or submitted manuscripts (10 weeks prior to graduation)
11. Corrected dissertation to dissertation committee (8 weeks prior to graduation)
12. Completion of an approved dissertation with 24 hours of dissertation credit
13. Announcement of dissertation defense (4 weeks prior notice)
14. Oral defense of dissertation
15. Submission of approved dissertation to Graduate School (2 copies), graduate program office (1 copy), and research advisor (1 copy) 3 weeks prior to graduation
16. Submission of departmental clearance form
17. All dissertations will be electronically submitted

COURSES (PHRM)**500-1 to 16 (1 per semester) Pharmacology Seminar.**

Presentation of research and current literature in pharmacology. Required of all graduate students in pharmacology after completion of four credit hours of 501. Requires presentation at a journal club session each fall semester and a formal seminar each spring semester for duration of registration. Graded *S/U* only. Prerequisite: PHRM 501. (Springfield Only.)

501-1 to 4 (1 per semester) Introduction to Seminar. Training in interpretation of research and current literature in order to enhance quality of seminar presentation. Enrollment for the initial four semesters is required of all beginning pharmacology graduate students. All other pharmacology graduate students must enroll in 500. (Springfield Only.)

530-3 Advanced Pharmacology & Neuroscience. The goal of this course is to understand the process involved in scientific discovery and research by reading, analyzing, criticizing and discussing scientific articles covering the field of Pharmacology and Neuroscience and the related field of cellular and molecular biology. Prerequisites: PHRM 550A Principles of Pharmacology and PHRM 577 Neuroscience. (Springfield Only.)

540-1 Responsible Conduct of Research. This course will provide information on topics relevant to the ethical conduct of research, including conflict of interest, publication policies, animal and human subjects, peer review and mentoring. No prerequisite. (Springfield Only.)

550A-4 Principles of Pharmacology. A study of chemistry, pharmacodynamic actions, mechanisms of action, absorption, distribution, metabolism, elimination, adverse effects, interactions and toxic effects of drugs currently used in therapeutics. Three to five hours lecture, one to four hours discussion per week. PHRM 550A mainly focuses on the drugs for the CNS and the autonomic system. No prerequisite required. (Springfield Only.)

550B-4 Principles of Pharmacology. A study of chemistry, pharmacodynamic actions, mechanisms of action, absorption, distribution, metabolism, elimination, adverse effects,

interactions and toxic effects of drugs currently used in therapeutics. Three to five hours lecture, one to four hours discussion per week. PHRM 550B covers the drugs for the endocrine system, the immune system and cancer. Must be taken in sequence. No prerequisite required. (Springfield Only).

551-4 Methods in Pharmacology. The main objective is to acquaint the student with various sophisticated laboratory equipment, basic techniques/principles of pharmacological experiments. One hour lecture and three hours laboratory twice weekly. This course is prerequisite to all advanced pharmacology courses. (Springfield Only.)

552-3 Applied Statistics for the Basic Sciences. This course reviews introductory statistics and focuses on advanced statistics, linear and nonlinear modeling, applicable to basic biomedical sciences. The course will also provide students with experience in the use of statistical package computer programs for data analysis. No prerequisite required. (Springfield Only).

555-3 Cardiovascular Pharmacology. A study of structure, biochemistry, electrophysiology and neurogenic and humoral regulation of the cardiovascular system in normal and diseased states. Three hours of lecture per week. Prerequisite: PHRM 550A/B or equivalent, or consent of course coordinator. (Springfield Only.)

560-3 Geriatric Pharmacology. A study covering age-related changes in the physiology of particular organ systems which lead to the prevalence of many diseases and to altered drug action in the elderly. Research issues in aging will be discussed emphasizing the biological substrates of altered pharmacodynamics and pharmacokinetics in the aged. Prerequisite: PHRM 550A/B Special approval needed from the course coordinator. (Springfield Only.)

565-3 Principles of Toxicology. This course deals with principles and understanding of phenomena of chemical-biologic interactions; a study of adverse chemical effects on living organisms and risk that chemical exposure poses to man/environment; deleterious, acute, chronic chemical effects on specific organs, tests to predict risks, facilitate search for safer chemicals and drugs and means of rational treatment of manifestations of toxicity; prominent discussion on drugs, medical devices, food additives, pesticides; regulation of toxic chemicals, hazardous wastes, toxic pollutants in water and air; and emphasis on diseases caused by and uniquely associated with drugs, diagnosis and treatments of such intoxicants.

574-3 Neuropharmacology. (Same as PHSL 574) A detailed examination of the biochemical aspects of neuropharmacology with emphasis on neurotransmitters; their synthesis, storage, release and metabolism in the central and peripheral nervous system. Considerable emphasis is placed on major research developments (both past and present) that influence how one studies the action of drugs on the nervous system. Prerequisites: PHSL 410 and CHEM 451.

577-4 Neuroscience. This course provides basic neuroscience knowledge covering the fundamental principles of neural cell biology, neurophysiology, neurochemistry, neuroanatomy and behavior. This knowledge is essential to understand the mode of action of the drugs acting on excitable cells including muscle, autonomic system and central nervous system. No prerequisite. (Springfield Only).

590-1 to 24 Readings or Research in Current Pharmacological

Topics. Special arrangements to be made with the instructor with whom the student wishes to work. Graded *S/U* only.

599-1 to 6 Thesis Research. Research for thesis for a Master's degree. Hours and credit to be arranged by chair and advisor.

600-1 to 32 (1 to 12 per semester) Dissertation Research. Research for dissertation for the Ph.D. degree. Hours and credit to be arranged by chair and advisor.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Philosophy

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COLLEGE OF LIBERAL ARTS

Graduate Faculty:

Alexander, Thomas, Professor, Ph.D., Emory University, 1984; 1985. American philosophy, classical philosophy, aesthetics, Dewey.

Anderson, Douglas, Professor, Pennsylvania State University, 1984; 2005. American philosophy, Peirce.

Auxier, Randall E., Professor, Ph.D., Emory University, 1992; 2000. American philosophy, process philosophy, philosophy of religion, history of philosophy ethics.

Beardsworth, Sara, Professor, Ph.D., University of Warwick, 1994; 2004. Nineteenth and twentieth century European philosophy, Kristeva.

Berger, Douglas, Professor, Ph.D., Temple University, 2000; 2006. Classical Chinese Philosophy, Cross-Cultural Hermeneutics, 19th and 20th Century Continental Philosophy. Hindu and Indian Buddhist Philosophy.

Clarke, David S., Jr., Professor, *Emeritus*, Ph.D., Emory University, 1964; 1966.

Eames, Elizabeth R., Professor, *Emerita*, Ph.D., Bryn Mawr College, 1951; 1963.

Gatens-Robinson, Eugenie, Associate Professor, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1983; 1974.

Gillan, Garth J., Professor, *Emeritus*, Ph.D., Duquesne University, 1966; 1969.

Hahn, Robert, Professor, Ph.D., Yale University, 1976; 1982. Greek philosophy, philosophy and history of science, Kant.

Hickman, Larry A., Professor, Ph.D., University of Texas at Austin, 1971; 1993. American philosophy, philosophy of technology.

Kelly, Matthew J., Associate Professor, *Emeritus*, Ph.D., University of Notre Dame, 1963; 1966.

Manfredi, Pat A., Associate Professor, Ph.D., University of Notre Dame, 1983; 1994. Philosophy of mind, American Realism,

Schedler, George, Professor, Ph.D., University of California, San Diego, 1973, J.D., Southern Illinois University, Carbondale, 1987; 1973. Philosophy of law, ethics, social philosophy.

Steinbock, Anthony J., Professor, Ph.D., State University of New York, Stony Brook, 1993; 1995. Contemporary French and German philosophy, recent European philosophy, 19th century philosophy.

Stikkers, Kenneth W., Professor, Ph.D., DePaul University, 1982; 1997. American philosophy, continental philosophy, ethics, Scheler, James.

Tyman, Stephen, Associate Professor, Ph.D., University of Toronto, 1980; 1980. 18th and 19th century European philosophy, phenomenology, existentialism.

Youpa, Andrew, Professor, Ph.D., University of California, Irvine, 2002. 2003. History of modern philosophy, contemporary moral philosophy, and ancient philosophy.

The Department of Philosophy offers a wide range of advanced courses in the major areas within the field leading to the M.A.

and Ph.D. degrees. Students are offered a diversified curriculum not dominated by one school of thought or method of approach. The broad range of specializations represented by the faculty exposes students to a variety of aspects of philosophy and at the same time permits them to concentrate on their own particular area of interest. Graduate-level courses in such allied fields as the natural and social sciences, the arts, linguistics, law, and women's studies offer supplements to the philosophy curriculum.

Graduate courses in philosophy may be used as a minor in programs leading to the Master of Arts or Master of Science in Education degrees. Students who do not plan to continue work in philosophy beyond the master's degree level are encouraged to elect a graduate minor or to combine philosophy with another subject in a 40-hour double major.

All graduate students in philosophy are expected to have some supervised experience in teaching basic work in the field, either through regular teaching assistantships or through special assignments. Opportunities for intern experience at area junior or community colleges are made available.

Admission

Admission to the philosophy graduate program requires the following:

1. An application form to be sent to the department. A non-refundable application fee of \$65.00 must be submitted with the application. This fee must be paid with a credit card.
2. Official transcripts of each school attended to be sent to the department.
3. A sample of written work, e.g., a term paper written for an undergraduate or graduate philosophy class, to be sent to the department's director of graduate studies.
4. Three letters of recommendation from individuals familiar with the student's work should be requested by the applicant to be sent to the department's director of graduate studies.
5. Graduate Record Examination verbal and quantitative scores are requested but not required to be submitted to the department. They are required for those applying for fellowships. TOEFL scores of at least 550 (paper score) or 220 (computer score) are required for all foreign students. These scores should be sent directly to the department. Scores for the Test of Spoken English are strongly recommended for foreign students applying for teaching assistantships.

The department expects an applicant for admission to its graduate program to have had at least 15 semester hours in philosophy or closely related theoretical subjects, including at least one semester in ethics, one in logic, and a year in the history of philosophy. The department may waive a portion of this requirement in favor of maturity and of quality of breadth of academic experience. Applicants will be required to make up serious background deficiencies by taking appropriate undergraduate philosophy courses without credit.

Application for financial assistance is made by filling out a financial assistance form. Applicants for Graduate School

and Morris Fellowships should send these applications to the department by February 1 of the academic year preceding that for which application is made. Applications for departmental graduate assistantships should be sent to the department by April 1 of that year.

Entry into the Ph.D. Program. There are two routes by which a student may enter the doctoral program. The standard one is by completion of an M.A. degree in philosophy at an accredited institution. There is also one alternative available in special circumstances.

Accelerated Entry. After at least one semester in residence, a student enrolled in the M.A. program may petition the department's faculty for accelerated entry into the Ph.D. program. Such entry is permitted only in special circumstances where a student has completed the equivalent of an M.A. degree at another institution or has exhibited some other special qualifications (e.g. papers and publications) for the research or creative activities of doctoral-level study.

Master of Arts Degree

The department's M.A. degree program is designed both for students wishing to continue on for a Ph.D. degree and those who plan to receive a terminal master's degree. For the latter students a minor concentration of up to 9 semester hours outside philosophy is permitted, subject to approval by the director of graduate studies. In order to receive the M.A. degree the student must fulfill the following requirements:

1. Complete 30 semester hours of course work in philosophy or allied fields, 6 of which may be credited toward preparation of a thesis.
2. Fulfillment of a formal logic requirement demonstrated in one of the four following ways:
 - a. by having earned a grade of *B* or better in an undergraduate course covering sentential calculus and first order predicate logic
 - b. by having earned a grade of *B* or better in Philosophy 105 as an undergraduate at SIU
 - c. by passing, with a grade of *B* or better during one's first year of residence, an examination covering sentential calculus and first order predicate logic
 - d. by passing with a grade of *B* or better Philosophy 420 during one's first year of residence.
3. Fulfillment of a language or research tool requirement. This may be accomplished by passing, with a grade of *B* or better, one of the following:
 - a. A 488 language course. (Note: these courses are offered through the Department of Foreign and Classical Languages at various times)
 - b. An examination offered through the Department of Philosophy.
 - c. A Directed Readings course offered either by the Department of Philosophy (PHIL 591) or (subject to approval by the Graduate Director) another academic unit, in which a philosophic text is translated and a final piece of research is produced.

d. The student may appeal to the Director of Graduate Studies:

1. To produce a translation of a previously untranslated text or article under professional guidance, whether within or outside the Philosophy Department.
2. For special dispensation, having already demonstrated sufficient competence in a language or research tool.

None of these options for fulfilling the language/research tool requirement count toward satisfying the 30 hour requirement, except the Directed Readings (PHIL 591).

4. A written comprehensive examination of up to five hours in length, dealing with the formulations and solutions of the persistent problems of philosophy as treated by major thinkers, from Thales to the end of the 19th Century. Normally, this examination should be taken no later than at the beginning of one's third semester of residence. Students who have incompletes older than one month may not sit for this exam. (Students are expected to make up incomplete grades within one month of completion of the course in which the incomplete was awarded.) The Graduate Committee may address special considerations. Students preparing for the exam should consult the Department's Study Guide, available in the Graduate Secretary's Office. The History Comprehensive exam will be offered once each year in the Fall Semester. The Comprehensive examination papers will be read by five members of the Department's faculty. These readers will submit to the Department's Director of Graduate Studies a 'high pass,' 'pass,' 'low pass,' 'terminal pass,' or 'fail' recommendation. Students failing the Fall exam may attempt to retake the examination in the Spring, through a request to the Graduate Director. No student may sit for a History Comprehensive examination more than two times without the written consent of the Graduate Committee. The Graduate Committee will make such decisions on a case-by-case basis. A terminal pass allows the candidate to receive the Masters Degree as the final degree sought in the Department.
5. Fulfillment of a research writing requirement by either of the following. In general, this requirement should be met no later than the end of one's second year of residence.
 - a. Presentation of an acceptable thesis, 50-75 pages in text length, to be written under the direction of a member of the Department. Six thesis hours is the maximum number of hours that can count for credit for the Master's degree (paragraph A, above). A preliminary draft stating the thesis title, describing the problem to be investigated, the method to be used, the outline of the study, and a preliminary bibliography must be prepared in advance for the thesis advisor. An instruction booklet should be secured from the Graduate School or the Department Graduate Secretary, which specifies the proper form for these documents.
 - b. In the event of a terminal MA, the student may present three edited research papers, written in connection with graduate courses or seminars under three different individuals (whose prior approval must be obtained), to a special committee of three members, only one of whom

may be an individual under whom the papers were originally written.

Doctor of Philosophy Degree

The Ph.D. degree in philosophy is designed to prepare students for college teaching and for research in their field of study. In order to receive the Ph.D. degree the student must fulfill the following requirements:

1. Completion of 30 semester hours of work beyond the M.A. level including:

Students, as part of their required coursework in the Ph.D. program, must take one course in each of the following areas as Course Distribution Requirements: Asian Philosophy, Ancient/Medieval Philosophy, Modern Philosophy, 19th Century Philosophy, 20th Century Philosophy. The 19th and 20th Century Philosophy requirements must include one course taken in the American tradition and one course in the Continental Tradition.

2. Demonstration of competence in formal logic in one of the following ways:
 - a. By having met the logic requirement for the Master's degree.
 - b. By having earned a grade of *B* or better in an undergraduate course covering sentential calculus and first order predicate logic.
 - c. By having earned a grade of *B* or better in Philosophy 105 as an undergraduate at SIU.
 - d. By passing with a grade of *B* or better, during one's first year of residence, an examination covering sentential calculus and first order predicate logic.
 - e. By passing with a grade of *B* or better, Philosophy 420 during one's first year of residence.
3. Incoming doctoral students from other universities will be required to take the history comprehensive examination on the history of philosophy. This must be completed by the end of the first year of residence. Candidates who have already passed a comprehensive examination on the history of philosophy, or who have taken a range of courses in the history of philosophy may appeal to the Graduate Director to be waived from taking this examination.
4. Each doctoral candidate should take a general preliminary examination after (s)he has accumulated between 24 to 30 hours of credit beyond the Masters degree level and before (s)he begins work on the dissertation. (Students who have incompletes older than one month may not sit for this examinations. Students are expected to make up incomplete grades within one month of completion of the course in which the incomplete was awarded. The Graduate Committee may address special considerations.) Candidates should see the Graduate Secretary for a copy of the Department's Study Guide, which lists recommended readings and study questions. The examination will cover the following areas:
 1. Ancient Philosophy
 2. Medieval Philosophy.
 3. Modern Philosophy

4. Nineteenth Century Philosophy

5. Early Twentieth Century Philosophy

This examination will consist of five sections, and students will write responses to five questions. Students failing the exam may sign up to sit for a retake in the Spring Semester. The preliminary examination papers will be read by members of the Department's faculty who will submit to the Department's Director of Graduate Studies a 'high pass,' 'pass,' 'low pass,' or 'fail' recommendation. Any student whose exam receives a simple majority of failing recommendations will have failed the exam, and any students whose exam receives simple majority of high passes or passes or of a combination will be deemed to have passed the exam. No student may sit for the preliminary examination more than two times without the written consent of the Graduate Committee. The Graduate Committee will make such decisions on a case-by-case basis.

During the semester after general preliminary examination has been passed, the students will take a special area/special thinker examination, to be designed by their advisor. When the student has fulfilled the requirements of the special area/special thinker examination to the advisor's satisfaction, the advisor will notify the Graduate Director that the student has fulfilled this requirement. The student will then have been deemed to pass the Preliminary Examinations (general and special area/special thinker) and may be admitted to candidacy.

5. Fulfillment of a language/research tool requirement in one of the following ways:
 - a. As indicated in the M.A. level requirements (paragraph I,C), for a second language in addition to that studied for the Master's degree. The level of proficiency required is the same as the M.A. level and fulfilling the M.A. requirement counts as one of the two required.
 - b. By showing greater proficiency in the same language that was used to meet the same requirements for the Master's degree.
 - c. By demonstrating a reading knowledge of one language as indicated in the M.A. level requirements and by completing, satisfactorily, at least two courses in a research related area, such as mathematics, history, archival work, editing, and so on, pursued outside the Department at the graduate level. This option must be approved by the Graduate Director prior to being undertaken.

Fulfilling these requirements does not count toward the completion of 30 semester hours of work beyond the M.A. level, unless the work is done as Directed Readings (PHIL 591).

6. Admission to Candidacy – After 30 hours of course work have been completed, the logic and the language requirements have been fulfilled and the preliminary examinations passed, the Director of Graduate Studies (in the person of the Graduate Secretary) must file an Admit to Candidacy form with the Graduate School. This form is to be filed at least six months before the expected date of graduation. The student is responsible for seeing whether

this form has, in fact, been filed. The student must have obtained the agreement of a faculty member to serve as dissertation director.

7. Dissertation

- a. The dissertation director is responsible for selecting a dissertation committee for the student. The committee shall consist of five graduate faculty members, at least one of whom shall be from an SIU graduate program outside the student's academic unit. The Department allows for the possibility of faculty from other institutions to serve on the student's committee in addition to the requisite number of SIU faculty. Once the dissertation director has been chosen and the committee formed, any subsequent changes to the dissertation directorship position must be approved by the Director of Graduate Studies. The appropriate change form must be sent to the Dean of the Graduate School for approval.
- b. In preparation for the writing of the dissertation, the candidate must have a prospectus review. The Director of the dissertation is responsible, in consultation with the candidate, for determining what appropriate background reading is necessary for beginning the dissertation and for the initial formulation of the project. The candidate will proceed to generate the prospectus. A prospectus should be approximately 10 - 20 pages in length; it should also include a proposed outline for the dissertation and a working bibliography. The Director of the dissertation will appoint a committee (four professors, including one from outside the Department) that will convene for the review of the prospectus. The review will help the candidate in the final formulation of the project before proceeding with the writing of the dissertation. The committee members will fill out a comment sheet for the candidate.
- c. While working on the dissertation, the student must register for the course numbered 600. The student is to devote at least one academic year of full-time work to complete the dissertation and will register for 24 semester hours of dissertation credit (Students may sign up for from 1 to 16 hours of PHIL 600 per semester). For example, the student wishing to complete the dissertation in one year may register for 12 hours of dissertation credit for each of two terms. Students who have registered for 24 semester hours of dissertation credit and have not completed the doctoral dissertation are subject to the continuing enrollment requirement course number 601. Students are required to complete 24 hours of Philosophy 600. The student may take only 6 of these 600 level hours prior to formal admission to candidacy, and only 6 of these hours will count towards the residency requirement.
- d. Students who have completed all but the dissertation requirements, but who have previously enrolled for the minimum number of research, thesis, or dissertation credit hours required of the degree, must enroll every semester for at least one hour until all degree requirements have been completed (Summer sessions

exempt). Whether in residence or not, students are required to enroll in Continuing Enrollment (PHIL 601 - 1 hour p/semester) if not otherwise enrolled. Concurrent registration in any other course is not acceptable. See the Graduate Catalog for more specific details, under heading GENERAL REGULATIONS AND PROCEDURES.

- e. The candidate will do the required research and write the dissertation. There is no given length for a dissertation, but 150 to 250 pages is the average length of a philosophy dissertation.
- f. The candidate and the dissertation director should work together until the document is ready to receive critical input from the committee. When the dissertation director indicates that the dissertation is ready for defense, it shall be required of the dissertation director to submit to each committee member a copy of the dissertation for the members' examination. This must be delivered at least one month in advance of the scheduled defense. The committee must then decide whether or not the dissertation is acceptable for defense.
- g. The candidate shall conduct an oral defense of the dissertation and related topics in the field before the dissertation committee. The oral defense is open to the public. Only the committee members vote or make recommendations concerning the acceptance of the dissertation and final examination. At the discretion of the dissertation director, guests may be permitted to ask questions of the candidate after the committee members have conducted the examination. A student will be recommended for the degree of Doctor of Philosophy only if the members of the committee judge both the dissertation and the performance at the final oral examination to be satisfactory. One dissenting vote is permitted.

Courses (PHIL)

400-3 Philosophy of Mind. An investigation of the philosophic issues raised by several competing theories of mind, focusing on the fundamental debate between reductionistic accounts (e.g., central state materialism, identity theories of the physical and mental) and views which reject such proposed reductions. Traditional and contemporary theories will be examined. Designed for students in the life and social sciences with little or no background in philosophy as well as philosophy students.

405-3 Democratic Theory. (Same as POLS 405) An examination of various aspects of democratic thought, including the liberal tradition and its impact upon the United States. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement. Prerequisite: POLS 114.

415-3 Logic of Social Sciences. (Same as Sociology 415) An examination of the theoretical structure and nature of the social sciences and their epistemological foundations. The relationship of social theory to social criticism; theory and praxis. Historical experience and social objectivity. Social theory as practical knowledge.

420-3 Symbolic Logic. An introduction to first order logic with

an emphasis on quantification. Topics include the semantics of the quantifiers, first-order validity, quantifier equivalences, functions, informal proofs, proofs on non-consequence, derivations using a Fitch natural deduction system, translations to and from English, soundness and completeness, the axiomatic method, first order set theory, and mathematical induction. Prerequisite: PHIL 320 or consent of the instructor.

434-3 Environmental Physiology. (Same as JRNL 434) Explores the moral environment of the mass media and the ethical problems that confront media practitioners. Models of ethical decision-making and moral philosophy are introduced to encourage students to think critically about the mass media and their roles in modern society.

441-3 Philosophy of Politics. (Same as Political Science 403) The theory of political and social foundations; the theory of the state, justice and revolution. Classical and contemporary readings such as: Plato, Aristotle, Hobbes, Locke, Rousseau, Marx, Dewey, Adorno and others. Prerequisite: Philosophy 340 or Philosophy 102 or consent of instructor.

445-3 Philosophy of Law. Study of contemporary philosophical essays on topics at the intersection of law and philosophy, such as abortion on demand, capital punishment, plea bargaining, campus speech codes, legalization of addictive drugs, and animal rights, and of what systematic philosophers, such as Thomas Hobbes, John Locke, John Stuart Mill, Karl Marx, and H.L.A. Hart have written about the nature of a legal system and the appropriate realm of legal regulation.

446-3 Feminist Philosophy. (Same as WGSS 456) (a) Feminist Philosophy – a general survey of feminist theory and philosophical perspectives. (b) Special Topics in Feminist Philosophy – A special area in feminist philosophy explored in depth, such as Feminist Ethics, French Feminism, Feminist Philosophy of Science, etc. (c) Women Philosophers – explores the work of one or more specific women philosophers, for example Hannah Arendt, Simone DeBeauvoir, etc.

450-3 American Transcendentalism. This course will study the rise of Transcendentalism as philosophical movement in early Nineteenth Century New England. Focus will be on Ralph Waldo Emerson and Henry David Thoreau with possible attention to Margaret Fuller and other figures like Hedge, Parker, and Brownson.

451-3 History of African American Philosophy. (Same as AFR 499A) A survey of major thinkers and themes in the history of African American Philosophy from colonial times to the 20th century. Prerequisite: At least one previous course in either Philosophy or Africana Studies.

455-3 Philosophy of Race. (Same as AFR 499B) A survey and critical examination of a range of theories on the nature and meaning of "race," the intersection of race with class and gender, and the promotion of racial progress. Such theories include realism and idealism, racial biologism, cultural race theory, social constructivist theory, integrationism, separatism, racial eliminativism, cosmopolitanism, and especially critical race theory. Prerequisite: At least one previous course in Philosophy or Africana Studies.

459-1 to 3 Topics in Africana Philosophy. (Same as AFR 499C) A seminar on varying topics, themes, and figures in African, African American, and/or Caribbean Philosophy, e.g., "W.E.B. Du Bois and His Contemporaries," "Pan-Africanism,"

"Philosophies of Liberation," "Black Feminism," "Contemporary African Philosophy," "Philosophies of the Caribbean." Prerequisite: At least one previous course in Philosophy of Africana Studies.

460-3 Philosophy of Art. We will examine several important theories that define art by focusing in on only one aspect, for example, imitation, expression, form, institutional setting or even indefinability. What role does imagination play in each of these accounts, and does this tell us something important about how people experience their world?

468-9 (3,3,3) Kant. (a) Theoretical Philosophy; (b) Practical Philosophy (c) Aesthetics, Teleology, and Religion.

471A-3 History of Medieval Philosophy. An examination of some of the most important figures and themes in medieval philosophical thought. Medieval debates in the area of metaphysics, natural philosophy, epistemology, ethics and politics will be explored in reading the works of such figures as Augustine, Boethius, Abelard Avicenna, Averroes, Maimonides, Bonaventure, Thomas Aquinas, Duns Scotus, Ockham and Nicholas of Cusa. Prerequisite: PHIL 304 or consent of instructor.

471B-3 The Medieval Thinker. An examination of the thought of one of the central and most influential figures of the medieval world. Possible subjects of the course are Augustine of Hippo, Al-Ghazali, Moses Maimonides, Bonaventure, Thomas Aquinas, Duns Scotus, Dante Alighieri or William Ockham. Prerequisite: PHIL 304 or consent of instructor.

472-3 The Rationalists. Study of the philosophy of one or more of Descartes, Spinoza, Leibniz, Malebranche, Wolff. Prerequisite: PHIL 305A or B or consent of instructor.

473-6 (3,3) The Empiricists. (a) Locke; (b) Hume. Study of the principles of British empiricism as represented by either (a) Locke or (b) Hume. May also include study of Berkeley. Prerequisite: PHIL 305 or consent of instructor.

474-3 Aristotle's Ethics. This course will focus on reading Aristotle's *Nicomachean Ethics*. Topics will include; the idea of a well-lived life (happiness), the relation of reason and desire, character formation, deliberative and moral reasoning, the types of human excellence, friendship and the role of philosophy in a well-lived life. Reading may include: Greek drama (e.g., *Abtigone*, *Medea*), Aristotle's *Politics*, and contemporary writers in "virtue ethics." Prerequisite: Philosophy 304.

475-3 Topics in Asian Philosophy. Extended examination of one or two major texts, figures or philosophical schools in Asian philosophy. Topics vary; students are advised to consult with the instructor.

477-3 Indian Philosophy. An examination of several major traditions and texts of Indian philosophy, such as Vedanta, Nyaya, the *Upanishads*, the *Bhagava Gita*, and contemporary political philosophy, with an emphasis on their social and historical contexts.

478-3 Buddhist Philosophy. An examination of several major philosophical traditions or figures in Buddhism, such as Madhyamika, Zen, Mind-Only, and the Kyoto school, with an emphasis on their social and historical contexts.

479-3 Chinese Philosophy. An examination of several major traditions of Chinese philosophy, such as Confucianism, Taoism, Neoconfucianism, Mohism, and Miaoism, with an emphasis on their social and historical contexts.

480-3 History of Analytic Philosophy. An introduction to the works of several major 20th century philosophers in the analytic tradition, including several of the following: Frege, Russell, Moore, Wittgenstein (early and later), members of the Vienna Circle, Ayer, Ryle, Quine, Putnam, Davidson. Includes discussion of challenges to the tradition that have developed within it.

482-3 Recent European Philosophy. Philosophical trends in Europe from the end of the 19th Century to the present. Phenomenology, existentialism, the new Marxism, structuralism and other developments. Language, history, culture and politics.

485-3 The Presocratics. The course will survey the Presocratic movement from the Milesians, Heraclitus and the Pythagoreans to the Eleatics, Empedocles, Anaxagoras and Democritus. Topics will include: the idea of nature, origin/source/principle (arche), the mathematical and nature, Being, pluralism and monism, the atomic theory. Some attention may be paid to the Sophists and the Epicureans. Prerequisite: Philosophy 304.

486-3 Early American Philosophy. From the Colonial Era to the Eve of World War I. This course will trace the transplantation of European philosophy to the New World and watch its unique process of development. Movements such as Puritanism, the theory of the American Revolution, the philosophical basis of the Constitution, transcendentalism, idealism, Darwinism and pragmatism and such figures as: Jonathan Edwards, Thomas Jefferson, James Madison, Ralph Waldo Emerson, Josiah Royce, Charles Sanders Peirce and William James.

487-3 Recent American Philosophy. From World War I to the present. The major American philosophers of the 20th Century, covering such issues as naturalism, emergentism, process philosophy, logical analysis and neopragmatism. Figures include: John Dewey, George Herbert Mead, George Santayana, Alfred N. Whitehead, C. I. Lewis, W. O. Quine and Richard Rorty.

490-1 to 8 Special Problems. Hours and credits to be arranged. Courses for qualified students who need to pursue certain topics further than regularly titled courses permit. Special topics announced from time to time. Students are invited to suggest topics. Special approval needed from the department.

500-3 Metaphysics. Seminar focusing on readings taken from major classical to contemporary writings in the subject of metaphysics (e.g. Aristotle's *Metaphysics*, Descartes' *Principles*, Whitehead's *Process and Reality*, etc.) or on special movements or on problems in the subject (e.g., substance, causation, reductionism, etc.)

501-3 Philosophy of Religion. Analysis of a problem in philosophical theology or the phenomenology of religion or of the work of a particular thinker.

530-3 Theory of Knowledge. Seminar focusing on readings taken from major classical to contemporary writings in the theory of knowledge (e.g., Plato, *Theaetetus*; Aristotle, *De Anima*; Locke, *Essay Concerning Human Understanding*; Quine, *Ontological Relativity*; Rorty, *The Mirror of Nature*, etc.) or on movements or problems in the subject (the object of knowledge, justification, method, etc.)

542-3 Political and Legal Philosophy. Relations of law, morality, and politics, and consideration of problems and issues in philosophy of law.

545-3 Ethics. An examination of the fundamental assumptions

underlying twentieth century British and American moral theory. Special attention is given to recent attempts to develop a psychologically realistic moral philosophy that avoids both moral absolutism and extreme forms of relativism.

551-1 Introduction to Teaching and the Profession. Introduction to the methodology and ethics of teaching philosophy; supervision of teaching assistants. Restricted to philosophy graduate students on assistantship contract.

552-1 Teaching Practicum. Ongoing supervision of teaching assistants and discussion of pedagogical, ethical and professional issues. Prerequisite: PHIL 551.

553-1 Supervision of Teaching for Graduate Assistants. Instruction in the methods of teaching philosophy and direct supervision of course teaching. Prerequisite: PHIL 551.

558-3 Phenomenology Research Group. The Phenomenology Research Group is a forum for doing phenomenology. Each year we focus on a particular theme. Beginning with first-person perspectives, we examine how something becomes meaningful for us in experience, and we inquire after cross-cultural structures of those experiences. Since the touchstone for such reflection is experience, the orientation of scholarship is problem-based and contextual. Satisfactory/Unsatisfactory Grades.

560-3 Aesthetics. Selected topics or writings.

562-3 Philosophy of Human Communication. (See CMST 562).

563-3 Philosophy of Nietzsche. A reading of Nietzsche's works and critical discussion of his major themes in light of their historical and contemporary reception.

564-3 Frankfurt School Critical Theory. An examination of the conceptual foundations and historico-philosophical theories of the Institute for Social Research School, known as critical theory, covering one or more of the major first- and second-generation thinkers: Horkheimer, Adorno, Marcuse, Habermas.

565-3 Continental Feminist Philosophy. (Same as WGSS 565) An examination of major figures and problems in continental feminism, focusing on metaphysical, ethical, political, and aesthetic theories in the works of Beauvoir, Kristeva, Irigaray, Butler, and Kofman.

566-3 Psychoanalysis. An examination of psychoanalytic theory in the context of continental philosophy, studying the foundation of psychoanalysis and major developments since Freud, including French psychoanalytic theory, the British School, and developments in American psychoanalysis.

570-3 American Idealism. One or more American idealists. Recent seminars have been devoted to the thought of Brand Blanshard and Peter A. Bertocci.

573-12 (3,3,3,3) American Realism. An examination of selected works of representatives in the realist tradition of American philosophy. (a) New Realism. (b) Critical Realism. (c) Scientific Realism. (d) Post Realism. a, b, c, & d can each be taken for 3 hours of credit.

577-12 (3,3,3,3) Classical American Philosophy. (a) Peirce. A focused study of various aspects of Peirce's philosophy such as his pragmatism and semiotics. (b) James. A critical examination of James' pragmatism, radical empiricism and pluralism. (c) Dewey. An examination of such themes in Dewey's philosophy as the influence of Darwin, nature and experience, aesthetics, technology and democracy. (d) Mead. A critical examination of

Mead's theories regarding the social self and social life.

578-3 Husserl. A careful and systematic reading of Husserl's major works or treatment of important themes throughout his writings, such as, the problem of evidence, perception and rationality, time-consciousness, phenomenology of association, or the life world.

579-3 Heidegger. This course features a close reading of Heidegger's masterwork, *BEING AND TIME*, supplemented by selected later essay and secondary literature as suggested by the instructor.

580-3 The Pre-Socratics. The emergence of Greek philosophy in the sixth century B.C., the Milesians, Heraclitus and the Pythagoreans; the Eleatic movement and Parmenides, and the critical systems of Empedocles, Anaxagoras, and atomism; concluding with a discussion of the Sophistic movement and Socrates. Epic, lyric and dramatic literature of the period may be examined as well as philosophical writings.

581-3 Plato. Intensive reading of selected texts focusing on some aspect of Plato's thought or on Platonism as a movement.

582-3 Aristotle. Intensive reading on several texts, analyzing selected portions of Aristotle's thought.

583-3 Merleau-Ponty. This course will focus on a major work by Merleau-Ponty (such as the *Phenomenology of Perception*), or will develop a major theme (perception, aesthetics, politics) in his thought by consulting several of his works.

584-3 Levinas. This course will be devoted to a detailed and systematic study of one of Levinas's major works, such as *Totality and Infinity* or *Otherwise than Being*, or to a survey of key elements of his thought contained in his many important essays.

587-3 Kant.

588-3 Hegel.

589-3 Scheler. This course is devoted to a systematic reading of Scheler's works that concern any one of the many dimensions of his thought, for example, the nature of "person," ethics and value theory, the philosophy of religion, the sociology of knowledge, or politics.

590-1 to 12 Graduate Seminar. Selected topics or problems in philosophy. Repeatable for 12 hours per term, 30 hours toward degree.

591-1 to 16 Readings in Philosophy. Supervised readings for qualified students. Prerequisite: students must have written permission from the graduate director to register for more than six hours at each level.

599-2 to 6 Thesis. Minimum of four hours to be counted towards a Master's degree.

600-1 to 16 Dissertation. Repeatable for 16 hours per term, 30 hours toward degree.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Physical Education

(See Kinesiology for program description)

Physician Assistant Studies

<http://www.siumed.edu/paprogram/>

SCHOOL OF MEDICINE

Graduate Faculty:

DiCocco, Margaret, Research Coordinator and Clinical Assistant Professor, Family and Community Medicine, M.S. University of Texas, San Antonio, 1998.

Debeljuk, Gloria, Clinical Assistant Professor, Family and Community Medicine, MD, MSW, LCSW, School of Medicine, University of Buenos Aires, Argentina, Southern Illinois University, 1967, 1994.

Diemer, Donald, *Program Director and* Clinical Assistant Professor, Family and Community Medicine, DHSc, MPAS, PA-C, University of Nebraska, Lincoln, 1996.

Johnson, Molly T., Clinical Assistant Professor, Family and Community Medicine, MS, APN, Pace University, Lienhard School of Nursing, Pleasantville NY, 1982.

Kelly, Cheri, Academic Coordinator and Clinical Assistant Professor, Family and Community Medicine, M.S., PA-C, Southern Illinois University, 1990, 1999.

Micnehmer, Erin, Clinical Assistant Professor, Family and Community Medicine, MSPAS, PA-C, Southern Illinois University Carbondale, 2010.

Miller, Brooke, Clinical Coordinator and Assistant Professor, Family and Community Medicine, MPAS, PA-C, University of Nebraska Medical Center, 2006, 2009.

Pierson, William T., Clinical Assistant Professor, Family and Community Medicine, Ph.D., Southwest College of Naturopathic Medicine, Tempe, AZ, 2000.

Pulver, Rhonda, Clinical Coordinator and Assistant Professor, Family and Community Medicine, MS, PA-C, Wayne State University, 2005; 2010.

Reichert, Rob, Instructor of Pharmacology, Family and Community Medicine, PharmD, St. Louis College of Pharmacy, 2011.

Ryznyk, Laurie, *Associate Director and* Associate Professor, Family and Community Medicine, MPAS, PA-C, University of Nebraska Medical Center, 2001, 1995.

Smith, Sidney, Clinical Assistant Professor, Family and Community Medicine, M.D., F.A.A.P, Northwestern University School of Medicine, 1965.

Waldyke, Kathryn, Clinical Assistant Professor, Family and Community Medicine, M.D., Michigan State University, 1990; 2011.

The Physician Assistant (PA) Program is offered by the School of Medicine Department of Family and Community Medicine. The Program utilizes a problem-based learning curriculum and clinical rotations to prepare primary care physician assistants to practice medicine with physician supervision. The PA Program also offers a Master's degree Completion Program (MCP) for Bachelor's degree prepared PAs who wish to earn a Master's degree. (See information about the Master's Completion Program after the professional program information.)

The physician assistant is often the first health care provider to see a patient and perform a variety of tasks including

collecting historical and physical examination data from the patient and ordering appropriate laboratory and diagnostic tests. The physician assistant synthesizes patient information and participates in formulating and executing a treatment plan to meet the patient's needs. A physician assistant can evaluate psychological aspects of a patient's health, counsel when appropriate, and teach patients about primary health problems. The physician assistant makes referrals when indicated and can perform procedures, such as EKGs, venipuncture, casting, suturing, and injections: the physician assistant prescribes medications. Graduates of the PA Program are trained as primary care providers and awarded the Master of Science in Physician Assistant Studies (MSPA) degree.

Admission

To be considered for enrollment in the Physician Assistant Program, prospective students must have at least overall, prerequisite, and science GPAs of 3.2 on a 4.0 scale, be admitted to the Graduate School, complete the program prerequisites and other requirements. This program requires a nonrefundable \$65.00 application fee (subject to change without notice by the SIU Board of Trustees) that must be submitted with the application for admissions to graduate study in the Physician Assistant Program. Accepted applicants will be required to submit a non-refundable enrollment deposit of \$500 to reserve a position in the class. The deposit is due within 10 days of the program's invitation to the applicant. The deposit will be applied to the student's Bursar account two weeks after matriculation. If an applicant, who has accepted an offer for admission, decides to drop, the enrollment deposit will not be refunded. MSPA students will not receive the border state decrease adjustment to their tuition and fees. Therefore, all out-of-state students will pay a higher tuition rate. No advanced placement is awarded towards completion of PA Program courses, even if the applicant is licensed as a medical doctor.

Degree Requirements

Prospective students must have completed all of the following prerequisite courses before matriculation: Medical Terminology - one semester or proficiency, Chemistry with labs - two semesters (select from General, Inorganic, Organic, or Biochemistry); Psychology - one semester; Human Physiology - one semester (higher level preferred); Human Anatomy - one semester (higher level with cadaver lab preferred); Microbiology with lab-one semester; General Biology for science majors, - one semester(may also select from Genetics or Cell and Molecular Biology); Statistics-one semester; English Composition - one semester; and CPR for Healthcare Providers. Graduate Record Examination (GRE), or MCAT scores must be submitted with application materials. Applicants must have successfully completed all the required prerequisites by the fall term prior to matriculation, with the exception of medical terminology and CAE or Healthcare Providers. Those must be completed by the end of the Spring term prior to matriculation.

Students who have completed or will soon complete a Bachelor's degree and prerequisite course requirements should contact the program advisor or consult the program website for the most current application information.

Enrollment in the Physician Assistant Program is limited and based on a competitive process. Applicants will be evaluated on

the overall submitted application package, including overall, science, and prerequisite GPAs that must each be a 3.2 on a 4.0 scale, academic potential, motivation, familiarity with the PA role, oral and written communication skills, interpersonal skills, and potential for success in the SIU Carbondale PA Program and the PA profession. Students will be selected by the Admissions Committee for an interview with a maximum of 40 being admitted to the professional sequence. The MSPA Program is extremely rigorous and outside employment while in the Program is discouraged.

Students selected for the professional sequence will begin study in the summer session. Those accepted into the Program will be notified of acceptance by the spring semester prior to the summer of entry. The curriculum is a 26-month sequence with the first 12 months (Phase I) consisting of problem-based learning activities, basic science and clinical medicine courses, and clinical experiences. The next 14 months consist of clinical rotations with seminars (Phase II) and a summer preceptorship (Phase III). All Students complete a Master's Project before graduation. During the clinical rotation phase, students may be required to relocate to other locations, called Hubsites, throughout Illinois. More information on deadlines or other requirements can be obtained from the PA Program Advisor at: paadvisement-L@listserv.siu.edu. All courses are restricted to Physician Assistant Majors.

Requirements for Major in Physician Assistant Studies Program

First Year Sequence (Phase I)	54
Physician Assistant 500, 501, 502, 503, 504, 505, 506, 507, 511, 512, 513, 514, 515, 521, 522, 523, 524, 525, 531, 532, 533, 534, 535, 536, 547, 550, 582, 599	
Second Year (Phase II & Phase II)	36
Physician Assistant 545, 551, 580, 581, 582, 583, 596, 599	
Total	90

Curricular Guide

PHASE I

SEMESTER 1 – SUMMER (UNIT 1) – 10 CREDIT HOURS

PA 500-1	Introduction to the Profession
PA 501-3	PBL, Unit 1
PA 511-1	Pharmacology I
PA 521-2	Clinical Anatomy and Integrated Science
PA 531-2	Patient Evaluation I
PA 547-1	Research Methods

SEMESTER 2 – FALL (UNITS 2 & 3) – 22 CREDIT HOURS

PA 502-3; PA 503-3	PBL, Units 2 and 3
PA 506-1	Patient Education/Behavioral Science
PA 507-1	Diversity in Medical Practice
PA 512-1; PA 513-1	Pharmacology II, III
PA 522-2; PA 523-2	Clinical Anatomy and Integrated Sciences II, III
PA 532-2; PA 533-2	Patient Evaluation II, III
PA 550-2;	Clinical Mentoring - Phase I
PA 599-2	Master's Seminar

SEMESTER 3 – SPRING (UNITS 4 & 5) – 22 CREDIT HOURS

PA 504-3; PA 505-3	PBL, Units 4 and 5
PA 506-1	Patient Education/Behavioral Science
PA 514-1; PA 515-1	Pharmacology IV, V
PA 524-2; PA 525-2	Clinical Anatomy and Integrated Sciences IV, V
PA 534-2	Clinical/Procedural Skills
PA 535-2	ACLS/EKG
PA 536-1	Introduction to the Surgical Setting
PA 550-2;	Clinical Mentoring – Phase I
PA 599-2	Master's Seminar

PHASE II

SEMESTER 4 – SUMMER – 6 CREDIT HOURS

PA 551-1	Clinical Mentoring – Phase II
PA 580-1	PBL Tutor Group – Phase II
PA 581-3	Clinical Rotations I
PA 599-1	Master's Seminar

SEMESTER 5 – FALL – 12 CREDIT HOURS

PA 551-2	Clinical Mentoring – Phase II
PA 580-2	PBL Tutor Group – Phase II
PA 582-6	Clinical Rotations II
PA 599-2	Master's Seminar

SEMESTER 6 – SPRING – 12 CREDIT HOURS

PA 551-2	Clinical Mentoring – Phase II
PA 580-2	PBL Tutor Group – Phase II
PA 583-6	Clinical Rotations III
PA 599-2	Master's Seminar

PHASE III

SEMESTER 7 – SUMMER – 6 CREDIT HOURS

PA 545-3	Health Care Systems
PA 596-3	Preceptorship

A limited number of electives are also available to MSPA students:

PA Elective Courses:

PA 508 1-3	Holistic Medicine
PA 585 1-6	Independent Study

PA Continuing Enrollment:

PA 601-1

Used to complete the Master's Project if all other Program requirements are met.

Master's Completion Program (30 credit hours, 12 months)

This option is for students who are PAs and hold a Bachelor's degree from an accredited PA Program. Interested candidates must be admitted to the Graduate School and complete an application to the Master's Completion Program (MCP) available through the PA Program Advisor at paadvisement-L@listserv.siu.edu .

Students are awarded the MSPA degree upon satisfactory completion of all requirements. Students enrolled in the Master's Completion Program may complete the Program via distance education with periodically scheduled seminars on campus, as required by the course syllabi. See a list of courses and descriptions below.

Requirements for Master's Completion Program

First Year Sequence	22
Physician Assistant 540, 547, 548, 549, 599	
Second Year Sequence	8
Physician Assistant 545, 599	
Total	30

MASTER'S COMPLETION PROGRAM CURRICULAR GUIDE

SEMESTER 1 – FALL - 10 CREDIT HOURS

PA 547-4	Research Methods and Evidence-Based Medicine
PA 548-4	Medicine in Practice
PA 599-2	Master's Seminar

SEMESTER 2 – SPRING - 12 CREDIT HOURS

PA 540-4	Ethical Issues in PA Practice
PA 549-4	Medicine in Practice
PA 599-4	Masters Seminar

SEMESTER 3 – SUMMER - 8 CREDIT HOURS

PA 545-3	Health Care Systems
PA 599-5	Master's Seminar

A limited number of electives are also available to MCPA students:

PA Elective Courses:

PA 508 1-3	Holistic Medicine
PA 585 1-6	Independent Study

PA Continuing Enrollment:

PA 601-1	Used to complete the Master's Project if all other Program requirements are met.
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For more information on either degree option offered by the Physician Assistant Program, visit our web site at: www.siumed.edu/paprogram or email the Program Advisor.

Courses (PA)

500-1 Introduction to the PA Profession. This course is designed to provide students with an understanding of professional issues of the Physician Assistant. Students are introduced to physician assistant history, standards of quality assurance, credentialing and licensure, regulations governing practice, business issues, and contract negotiation. Students explore opportunities in professional organizations and ways to strengthen their professional development.

501-3 Problem Based Learning Group, Unit 1. This course is designed to focus on medical topics in cardiology and gastroenterology. Problem-based learning is utilized with emphasis on expanding the student's knowledge base, enhancing the student's clinical reasoning skills and self-directed learning, and improving interpersonal communication skills among students and patients. Six to nine students are allowed per section.

502-3 Problem Based Learning Group, Unit 2. This course is designed to focus on internal medicine topics in respiratory medicine, dermatology, urology, and infectious disease. Problem based learning is used with emphasis on expanding the student's knowledge base, enhancing clinical reasoning

skills and self-directed learning, and improving interpersonal communication skills among students and patients.

503-3 Problem Based Learning Group, Unit 3. This course is designed to focus on internal medicine topics in neurological and psychiatric diseases. Problem-based learning is utilized with emphasis on expanding the student's knowledge base, enhancing the student's clinical reasoning skills and self-directed learning, and improving interpersonal communication skills among students and patients.

504-3 Problem Based Learning Group, Unit 4. This course is designed to focus on health concerns, physiological and psychosocial issues of obstetrics, gynecology, urology, and pediatric gastroenterology. Problem-based learning is utilized in expanding the student's knowledge base, clinical reasoning skills, self-directed learning, and improving interpersonal communication skills.

505-3 Problem Based Learning Group, Unit 5. This course is designed to focus on medical topics related to endocrinology, renal disease, and metabolism. Problem-based learning is utilized with emphasis on expanding the student's knowledge base, enhancing the student's clinical reasoning skills and self-directed learning, and improving interpersonal communication skills among students and patients.

506-1 to 3 Behavioral Science/Patient Education. This course explores behavioral science and patient education as it applies to the practice of medicine, as well as maintenance of health and prevention of illness.

507-1 Diversity in Medical Practice. Students examine issues that arise when delivering medical services to persons of diverse cultures, ethnicity, race, sexual orientation, gender, and socioeconomic status. Implications for providing medical services to persons who have experienced discrimination and disadvantage will be discussed.

508-1 to 3 Holistic Medicine. This course is designed to explore the current research, practice and applications of Mind-Body-Spirit Medicine (MBSM). Students will explore the use of various techniques for use in clinical and therapeutic settings as well as for maintaining their own personal health.

511-1 Pharmacology I. This course introduces students to the therapeutic agents most commonly used for treatment of disorders of the cardiovascular and gastrointestinal systems. The practical aspects of dosage, schedules, therapeutic effect, adverse reactions, metabolism, mechanism of action and excretion are investigated.

512-1 Pharmacology II. This course introduces students to the therapeutic agents most commonly used involving the pulmonary and integumentary systems, as well as those medications used in infectious disease. The practical aspects of dosage, schedules, therapeutic effect, adverse reactions, metabolism, method of action and excretion are investigated.

513-1 Pharmacology III. This course introduces students to the therapeutic agents most commonly used in neurology and psychiatry. The practical aspects of dosage, schedules, therapeutic effect, adverse reactions, metabolism, method of action and excretion are investigated.

514-1 Pharmacology IV. This course introduces students to the therapeutic agents most commonly used in practice involving pregnancy, neonates, infants, sexually transmitted diseases, menopause, and prostate disorders. The practical aspects

of dosage, schedules, therapeutic effect, adverse reactions, metabolism, method of action and excretion are investigated.

515-1 Pharmacology V. This course introduces students to the therapeutic agents most commonly used in treating diabetes, thyroid disorders, renal disease, and fluid disorders. The practical aspects of dosage, schedules, therapeutic effect, adverse reactions, metabolism, method of action and excretion are investigated.

521-2 Clinical Anatomy and Integrated Sciences I. This course involves the study of anatomical structures with cadaveric materials, clinical applications, physiology and pathophysiology of selected systems. Radiology, microscopy, and embryology issues will be included.

522-2 Clinical Anatomy and Integrated Sciences II. This course involves the study of anatomical structures with cadaveric materials, clinical applications, physiology and pathophysiology of selected systems. Radiology, microscopy, and embryology issues will be included.

523-2 Clinical Anatomy and Integrated Sciences III. This course involves the study of anatomical structures with cadaveric materials, clinical applications, physiology and pathophysiology of selected systems. Radiology, microscopy, and embryology issues will be included.

524-2 Clinical Anatomy and Integrated Sciences IV. This course involves the study of anatomical structures with cadaveric materials, clinical applications, physiology and pathophysiology of selected systems. Radiology, microscopy, and embryology issues will be included.

525-2 Clinical Anatomy and Integrated Sciences V. This course involves the study of anatomical structures with cadaveric materials, clinical applications, physiology and pathophysiology of selected systems. Radiology, microscopy, and embryology issues will be included.

531-2 Patient Evaluation I. This course is designed to prepare the Physician Assistant student in taking a patient history and performing portions of the physical exam. Interview and communication skills, medical terminology, and recording patient information are also explored.

532-2 Patient Evaluation II. This course is designed to build on student's knowledge of pertinent physical exam skills, and increase knowledge regarding the medical history and clinical procedures. Students continue to improve skills in areas of the patient interview, medical terminology, and recording patient information.

533-2 Patient Evaluation III. This course is designed to build on students' knowledge of physical exam skills, introduce new systems, and improve skills in areas of the patient interview, medical terminology, and recording patient information.

534-2 Clinical Procedural Skills. Students develop and expand their skills in performance of clinical procedural skills needed for competency in office and hospital-based practice. Topics will include central line placement, IV therapy, EKG, lumbar puncture, venipuncture, casting, suturing, and thoracentesis.

535-2 EKG and Advanced Cardiac Life Support (ACLS). EKG/ACLS is designed to provide the knowledge and skills needed to read EKGs and to evaluate and manage the first ten minutes of an adult ventricular fibrillation/tachycardia arrest. Students learn to manage ten core ACLS cases, a respiratory emergency, four types of cardiac arrest, four types of pre-arrest

emergencies, and stroke.

536-1 Introduction to the Surgical Setting. During this course, the student will be exposed to the various aspects of the general surgical setting. Fundamentals to be introduced include pre- and post-operative care, sterile technique, gowning and gloving, and the identification of surgical instruments.

540-4 Ethical Issues in Physician Assistant Practice. This course is primarily for the Master's Completion student and focuses on ethical principles (beneficence, autonomy, nonmaleficence, justice, and autonomy) and the application of these to ethical dilemmas encountered in medical service provision and medical research. The student will examine federal and state legislation, policies, and practice guidelines as related to the practicing Physician Assistant.

545-3 Health Care Systems. This course is designed to cover the following topics: delivery of health care, standards of care and guidelines as they affect practice issues, cost and effectiveness, economics of health care, insurance and health care, indigent medical care, the health workforce, access to care, health policy, and technology (electronic medical records, email, telemedicine).

547-1-4 Research Methods and Evidence Based Medicine (EBM). This course focuses on scientific inquiry within the Physician Assistant practice, covering the application of basic research methodology including problem formation, research designs, sampling, measurement, data analysis technical writing and dissemination of research results, and research ethics. Students will also focus on developing evidence-based medicine (EBM) skills.

548-4 Medicine in Practice I. Students in this course study evidence-based principles and apply them to clinical practice. They also expand their knowledge of clinical procedures and therapeutics. Students log clinical hours as well as complete didactic assignments throughout this course.

549-4 Medicine in Practice II. Students in this course continue to build upon the study of evidence-based medicine principles learned in previous courses and apply them to clinical practice. They will also expand their knowledge of clinical procedures and therapeutics. Students log clinical hours as well as complete didactic assignments throughout this course.

550-1 to 4 Clinical Mentoring-Phase I. Students gain clinical experience in the community setting by participating in a one-half day per week continuity clinic in Family Medicine with a designated mentor. Students register for this course during the first fall semester of the program. They register again for this course in the spring semester, until Phase II.

551-1 to 5 Clinical Mentoring-Phase II. Students continue to gain clinical experience in the community setting by participating in a one-half day per week continuity clinic in Family Medicine with a designated mentor. Students register for this course during the second summer semester of the program. They register again for this course in subsequent semesters, until the Preceptorship. Maximum hours per term are two.

580-1 to 6 Problem Based Learning (PBL) Group Phase II. Phase II students participate in a one-half day per week problem based learning tutor group, in which they engage in the Barrowsian method of problem-based learning at respective Hubsites. This course is designated to foster independence in

clinical reasoning and knowledge synthesis by working through patient problems, as well as improving the application of knowledge to clinical practice.

581-3 Clinical Rotations I. This is the first (summer semester) in a three course sequence of supervised clinical experience in a variety of settings and nine specialty areas.

582-6 Clinical Rotations II. This is the second course (fall semester) in a three course sequence of supervised clinical experience in a variety of settings and nine specialty areas.

583-6 Clinical Rotations III. This is the third course (spring semester) in a three course sequence of supervised clinical experience in a variety of settings and nine specialty areas.

585-1 to 6 Independent Study. Directed independent study in selected areas of Physician Assistant studies.

596-3 Preceptorship. The eight week preceptorship simulates the role of the Master's prepared graduate Physician Assistant, with supervision by the clinical preceptor. This is generally completed in a primary care area of medicine.

599-1 to 15 Master's Seminar. This is a longitudinal course taken over several semesters in which students work on proposal design, development, construction, research, writing, and project presentation. The Master's Seminar culminates in defense of a Grand Rounds Presentation, Community Project Presentation, or a published Problem-Based Learning Module and Tutor Guide. Restricted to Physician Assistant majors.

601-1 Continuing Enrollment. For graduate students who have not completed the Program and are in the process of their Master's project. The student must have completed all other program requirements to be eligible to register for this course. Concurrent enrollment in any other courses is not permitted. *S/U* or *DEF* grades only. Prerequisite: Completion of all program coursework except PA 599.

Physics

<http://www.physics.siu.edu/>

physics@physics.siu.edu

COLLEGE OF SCIENCE

Graduate Faculty:

Ali, Naushad, Professor and *Chair*, Ph.D., University of Alberta, Canada, 1984; 1986.

Byrd, Mark, Professor, Ph.D., University of Texas at Austin, 1999; 2003.

Chitambar, Eric, Assistant Professor, Ph.D., University of Michigan, Ann Arbor, 2010; 2012.

Cutnell, John D., Professor, *Emeritus*, Ph.D., University of Wisconsin, 1967; 1968.

Gruber, Bruno J., Professor, *Emeritus*, Ph.D., University of Vienna, Austria, 1961; 1972.

Henneberger, Walter C., Professor, *Emeritus*, Ph.D., Gottingen University, Germany, 1959; 1963.

Jayasekera, Thushari, Assistant Professor, Ph.D., University of Oklahoma, 2005; 2011.

Johnson, Kenneth W., Professor, *Emeritus*, Ph.D., Ohio State University, 1967; 1970.

Malhotra, Vivak, Professor, *Emeritus*, Ph.D., Kanpur University, India, 1978; 1984.

Masden, J. Thomas, Associate Professor, *Emeritus*, Ph.D., Purdue University, 1983; 1984.

Mazumdar, Dipanjan, Assistant Professor, Ph.D., Brown University, 2008; 2014.

Migone, Aldo D., Professor, Ph.D., Pennsylvania State University, 1984; 1986.

Poopalasingam Sivakumar, Assistant Professor, Ph.D., University of Oklahoma, 2009; 2015.

Sanders, Frank C., Jr., Associate Professor, *Emeritus*, Ph.D., University of Texas, 1968; 1969.

Saporoschenko, Mykola, Professor, *Emeritus*, Ph.D., Washington University, 1958; 1965.

Silbert, Leonardo, Associate Professor, Ph.D., University of Cambridge, 1998; 2006.

Talapatra, Saikat, Associate Professor, Ph.D., Southern Illinois University, Carbondale, 2002; 2007.

The Department of Physics offers graduate programs leading to the Master of Science degree with a major in physics and to the Doctor of Philosophy degree in Applied Physics.

This program requires a \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Physics. Applicants must pay this fee by credit card.

Master of Science

In order to be considered for admission into the Master of Science program, students must have a baccalaureate degree in Physics, or equivalent. Applicants for admission to the Master's degree program are strongly encouraged to submit GRE scores together with other application materials.

In addition to the general requirements of the Graduate School for the Master of Science degree, the student must complete PHYS 500A (or mathematics equivalent), 510, 520A, B, and 530A, B.

Other specific requirements for the Master's degree are as follows:

A thesis is required, based upon not more than six nor less than three semester hours of 599-level credit. The 599 credit requirement is in addition to the minimum of 15-hour requirement at the 500 level as stated in this catalog and should be distributed preferably over several terms of enrollment.

Each candidate for an M. S. degree is required to pass an examination, written or oral or both, covering graduate work including the thesis; the examination is administered by the student's thesis committee.

Each candidate for an M.S. degree is required to earn one credit in PHYS 581 by lecturing in the graduate seminar. An oral thesis defense satisfies this requirement.

Master of Science (Non-Thesis/Research Paper Option)

In order to be considered for admission into the Master of Science Non-Thesis Option (MSNT) program, students must have a baccalaureate degree in Physics, or equivalent.

In addition to the general requirements of the Graduate School for the Master of Science degree, the student must complete PHYS 425, 450, 500A (or mathematics equivalent), 510, 520A, B and 530A. Those students enrolled in the MS non-thesis option who have taken PHYS 425 and/or PHYS 450 as part of their undergraduate curriculum may replace those courses with any other 500 level course and/or 400 level course (after consulting with their respective advisory committee).

An advanced experimental or computational, or theoretical project resulting in a research paper is required, based upon not less than four semester hours of PHYS 598. The research paper has to be completed by the end of the second year in the program. It should be written as a standard scientific text (i.e., with appropriate referencing), and it should be between 15 and 20 pages in length. The research paper should explain in detail the project undertaken by the student enrolled in the MS non-thesis option and must contain background and motivation (with proper literature review), and problem statement and goals of the project, results, a discussion related to the work undertaken in accomplishing the goals and objectives, conclusions and plans for future work. The style that should be used is that appropriate for a manuscript submitted to Phys. Rev.

Further, it is also noted that the outcome of the project (in the form of the research paper) has to be approved by the student's advisory committee. Once the research paper is approved, an electronic version of the research paper must be filed in the Graduate School by submission at Open SIUC.

Other specific requirements for the MSNT are as follows:

Each candidate for an MSNT degree is required to have a CGPA of 3.0 (in 4.0 scale) throughout the program.

Doctor of Philosophy in Applied Physics

Program Description and Objectives:

The Department of Physics offers a graduate program at the doctoral level leading to the Ph.D. degree in Applied Physics. The Applied Physics doctoral program is designed to provide advanced studies both in the application of the concepts and methods of physics to various research areas, including:

materials, nanoscience and nanotechnology, quantum computing, computational physics, condensed matter physics, magnetism, thin films, and in the application of the methods and techniques of physics to the study of industrial processes and products. The Applied Physics Ph.D. provides students with broad, in-depth knowledge of the fundamentals of those areas of physics relevant to applications, as well as with advanced specialized knowledge in applied areas. The ultimate goal of this program is to produce graduates that are competent scientific researchers in Applied Physics, i.e., researchers that are capable of initiating and completing an independent investigation in a specific sub-field of Applied Physics. The graduates of this program will be able to fill the needs of academia, industry and government in the area of Applied Physics.

Admissions

Applicants will be admitted into the Applied Physics Ph.D. following one of three routes:

1. Direct admission: this option requires the applicant to have completed a Bachelor's degree in Physics (or its equivalent) with a grade point average of at least 3.25 (in exceptional cases the Department may solicit the Graduate School to waive this requirement).
2. Accelerated admission: students are admitted into the Masters' degree program and after one semester they can be considered for admission into the doctoral program if they show exceptional research potential and have accumulated a GPA of 3.25.
3. Regular admission: for students who have completed a Master's degree in Physics or equivalent and have accumulated a GPA of 3.25 in graduate level courses (in exceptional cases the Department may solicit the Graduate School to waive this requirement). The students obtaining their Master's degree at SIU will have satisfied most of the core course requirements for the Applied Physics Ph.D.

All applicants for admission to the doctoral program in Applied Physics must submit Graduate Record Examination (GRE) scores together with other required application materials.

Course Requirements

In addition to the general requirements of the Graduate School, the student must complete a sequence of Required Basic Core Courses, and Elective Courses that includes:

Required Basic Core Courses:

- Physics 500A Mathematical Methods in Physics (3 credits)
- Physics 510 Classical Mechanics (3 credits)
- Physics 520A,B Electromagnetic Theory (6 credits)
- Physics 530A,B Quantum Mechanics II (6 credits)

In addition, students are required to complete one additional course (3 credits only) from those in the following list:

Elective Courses:

- Physics 550 Computational Physics
- Physics 545A Statistical Mechanics II (3 credits only)
- Physics 565A Solid State Physics II (3 credits only)
- SCI 501A,B Research Transmission Electron Microscopy
- SCI 502A,B Research Scanning Electron Microscopy

- Physics 575 Special Topics in Physics: Magnetism and Magnetic Materials
- Physics 575 Special Topics in Physics
- Physics 575 Special Topics in Physics: Spectroscopy of Materials
- Physics 575 Special Topics in Physics: Surface Science
- Physics 575 Special Topics in Physics: Quantum Computing
- Physics 575 Special Topics in Physics: Hybrid Materials
- Physics 575 Special Topics in Physics: Advanced Optics

The following courses are not allowed to count as electives: Physics 599 (Thesis), 600 (Dissertation), and 601 (Continuing Enrollment).

Starting no later than the beginning of the third semester in the program, students will be required to enroll for two consecutive semesters in Physics 570, a 3-credit hour per semester Special Project course.

In addition to the above-described coursework, while working on their dissertation, the students must complete 24 credit hours of Physics 600 (Dissertation) in no less than two academic years of full-time work.

Admission to Candidacy

To be admitted to candidacy, the prospective doctoral candidate must satisfactorily complete the Qualifying Procedure.

The Qualifying Procedure includes:

1. Three written examinations
2. A research proposal
3. The student's performance in Required Basic Core courses
4. The recommendation of the research advisor (if the student has a research advisor).

1. Three written examinations – The students will take three written exams. The exams are chosen by the student from the following five possible topics: Quantum Mechanics, Classical Mechanics, Statistical Mechanics, Electromagnetic Theory and Solid State Physics.

The students will have to select three out of the five exams to take (i.e., they will not be allowed to pick the best three out of four or five).

The students will have to pass the three exams, as evaluated and determined by the Graduate Committee.

These written exams will be prepared at the undergraduate level. That is, at a level that is consistent with the corresponding courses at the 200-, 300-, 400- level at SIU.

The level will be specified by the corresponding textbooks used in these courses at SIU.

For Classical Mechanics Halliday and Resnick (or equivalent) specifies the 200- level and Symon or Thornton and Marion specifies the 300- and 400- level;

For E+M Theory, Halliday and Resnick (or equivalent) specifies the 200- level and Lorrain and Corson, or Griffiths or equivalent specifies the 300- and 400- level;

For Statistical Mechanics, at the 400-level only, “Thermal Physics” by Kittel and Kroemer specifies the level;

For Quantum Mechanics at the 300-level “Modern Physics” by Serway, Moser, and Moyer or equivalent, specifies the level, and “Introduction to Quantum Mechanics” (Second Edition), by David J. Griffiths specifies the 400-level;

For Solid State Physics, at the 400-level only “Introduction to Solid State Physics” by Kittel specifies the level

The written exams will consist of a set of questions from which the students will get to choose a subset that they will answer. Where it is applicable (i.e. for Classical Mechanics, E+M and Quantum), some of the questions will be at the 200- level and other at the 300- and 400- level.

The written exams will be held one per day over the course of a week.

2. **A written research proposal.** – The research proposal has to be completed by the end of the second year in the program.

It should be written as standard scientific text (i.e., with appropriate referencing), and it should be between 10 and 15 pages in length.

The style that should be used is that appropriate for a manuscript submitted to Phys. Rev.

3. **The course performance** of the student in the required classes for the program. (must have a grade point average of 3.25 (out of 4) in the basic core curriculum in Applied Physics).

4. **If the student is engaged in research** by the end of the first year in the program, the recommendation of the research advisor.

General Considerations

Students are expected to have completed the Qualifying Procedure by the end of the fourth semester in the doctoral program.

Students are required to take the exam at the end of their first Spring semester in the program.

The written exam portion of the Qualifying Procedure will be prepared and administered by an examination committee appointed by the Chair.

The written exam portion of the Qualifying Procedure will be held on a yearly basis, generally in early August.

Students will be allowed to participate in the exam portion of the qualifying procedure twice. The one exception to the above rule is that students who so desire can have a “free try” at the Qualifying Examination by taking it at the beginning of their first semester in the program without this instance counting as one of the two allowed opportunities to take the exam. Students are encouraged to attempt the written exam portion of the Qualifying Procedure as early as the beginning of their first semester in the program in order to make use of the free option.

Students will be allowed to change one exam area (of the three) per each time they take the exams. This adds up to a maximum total of two changes, if the student takes the exams in the free try. Note that what is limited to two times (or to

three times, if the student takes advantage of the free try) is the number of times the student can participate in the qualifying exam procedure; i.e. it is not that the student can repeat two times each individual exam. The students can participate in the exam process twice (or three times with the free try) and must pass three exams at the end of their tries.

Those students who start at SIU in the Spring semester will have their free try at the beginning of the following Fall; they will be required to take this free try.

Students who complete the Master’s degree at SIU and then proceed to the Ph.D. will be considered as incoming doctoral students for the purpose of the free try exam. They will, however, be required to take this free try.

Those students who begin at SIU in the Fall can have their free try only in the Fall in which they start.

The Graduate Committee will evaluate all four points of the Qualifying Procedure for each student applicant and will decide on admission to candidacy for each applicant. The Graduate Committee will decide on what weight will be given to the different portions of the Qualifying Procedure.

Upon successful completion of the Qualifying Procedure, the Department will request the Graduate School to admit the student to candidacy for the doctoral degree, once the applicant has completed the required 24 hour residency period.

Dissertation Committee and Dissertation Examination. No later than six months after admission to candidacy, the student will request the appointment of a dissertation committee to supervise the student’s dissertation. This committee will include five faculty members, with at least one from outside the Department of Physics, at least one doing research in theoretical physics, and at least one doing research in experimental physics. The majority of the committee shall consist of faculty members from the Department of Physics. The committee will be chaired, in most cases, by the student’s dissertation supervisor. The committee will meet within two months after its formation to determine if any specific coursework, beyond the core curriculum, is to be required of the student, and to determine if any special requirements might be appropriate for the student’s particular research area. At this time (i.e., no later than eight months after admission to candidacy), the committee will be given a formal, written dissertation proposal and an oral presentation on the proposed research by the student.

Dissertation Defense. Upon completion of a dissertation demonstrating the student’s ability to conduct independent research, the dissertation committee will administer a final oral examination. This oral examination shall consist of a defense of the dissertation. Upon the satisfactory completion of both the dissertation and the final examination, the committee will recommend the student for the doctoral degree.

Courses (PHYS)

420-3 Electricity and Magnetism II. Induced electromotive force, quasisteady currents and fields, Maxwell’s equations, electromagnetic waves and radiation, with applications. Prerequisite: 320 with grade of C or better.

424-4 Electronics for Scientists. Coordinated two-hour lecture and four-hour laboratory study of electronics. Emphasis is on

overall modern electronics and its applications in the experimental research laboratory setting. Topics include DC and AC circuit theory, measurement techniques, semiconductor active devices, operational amplifiers and feedback, digital circuits, Boolean algebra, microprocessors and large scale integration, digital to analog and analog to digital conversion, and data acquisition. Prerequisite: PHYS 203B or 205B and Mathematics 111 with grade of C or better.

425-3 Solid State Physics I. Structure of a crystalline solid; lattice vibrations and thermal properties; electrons in metals; band theory; electrons and holes in semiconductors; optoelectronic phenomena in solids; dielectric and magnetic properties; superconductivity. Prerequisite: PHYS 310, 320, and 430 with grade of C or better.

428-3 Modern Optics and Lasers. Properties of electromagnetic waves in space and media, polarization and interference phenomena and devices, electro and magneto-optic effects, optical gain and lasers. Prerequisite: PHYS 420 with grade of C or better.

430-3 Quantum Mechanics I. An introduction to quantum phenomena, wells, barriers, Hydrogenic atoms, angular momentum and identical particles. Prerequisite: PHYS 305, 310, and 320 with a grade of C or better. Prior or concurrent enrollment in PHYS 420 is desirable.

431-3 Atomic and Molecular Physics I. Atomic spectra and structure; molecular spectra and structure. Prerequisite: PHYS 430 with grade of C or better.

432-3 Nuclear Physics I. Basic nuclear properties and structure; radioactivity, nuclear excitation, and reactions, nuclear forces; fission and fusion. Prerequisite: PHYS 430 with grade of C or better.

440-3 Applications of Quantum Mechanics. Applications of quantum mechanics to include time-independent and time-dependent perturbation theory, variational methods, introduction to solid-state physics and materials. Prerequisite: PHYS 430 with a grade of C or better.

445-3 Thermodynamics and Statistical Mechanics. Laws of thermodynamics; Principles and Applications of Classical and Quantum Statistical Mechanics; Introduction to Phase Transitions. Prerequisites: PHYS 305 and PHYS 301 both with a grade of C or better; MATH 251 with a grade of C or better.

450-3 Advanced Laboratory Techniques. Introduces students to experimental research and encourages them to develop and carry out experiments. Prerequisite: PHYS 305 and PHYS 355 with a grade of C or better. Lab fee: \$50.

458-2 Laser and Optical Physics Laboratory. Properties of laser beams and resonators, fluorescence and two photon spectroscopy, diffraction, Fourier transformation and frequency filtering, electro and magneto-optic modulation, fiber propagation and related experiments. Prerequisite: PHYS 428 with a grade of C or better.

470-1 to 3 Special Projects. Each student chooses or is assigned a definite investigative project or topic. Prerequisite: PHYS 310, 320 or consent of instructor.

475-3 Special Topics in Physics. These courses are advanced in special topics in physics designed to enable undergraduate and graduate students to become well-versed in a particular and current research area of physics with the intention of preparing them for future research and/or industrial applications. They

are offered as the need arises and interest and time permit. Students are required to give presentations. Special approval needed from the instructor.

476B-3 Introduction to Biological Physics. This course provides an introduction to how physics principles and techniques are applied to study and describe complex and emergent processes found at the biological and biomolecular level. This course combines several topics not usually covered in standard undergraduate science courses to qualify and quantify cell structure, mechanics, dynamics, self-assembly, and biological functionality. Prerequisite: Two semesters of an introductory physics sequence (PHYS 203A,B or PHYS 205A,B), with minimum grades of C, MATH 150 or concurrent enrolment.

476C-3 Introduction to Computational Physics. This course provides fundamental knowledge in the usage of computers for solving natural problems in different types of physical systems. The class will give a thorough understanding of various numerical techniques such as interpolating/extrapolating data, integrating ordinary and partial differential equations, and solving linear algebra problems. Students will be guided to write problems for solving several applied physics problems in classical and modern physics. A brief survey of High Performance Computing will also be presented giving students a working knowledge of scientific computing. Prerequisites: Two semesters of an introductory physics sequence (PHYS 203A, B or PHYS 205A,B), with minimum grades of C and concurrent enrollment in PHYS 305, PHYS 301, PHYS 310 and PHYS 320 are not required but recommended.

476M-3 Introduction to Materials Science and NanoPhysics. This course will serve as an introductory course in Materials Science and Nanoscale Physics. Topics to be covered include: The need for studying Materials Science, classification of materials, advanced concepts in materials manufacturing, modern materials, nanoscale materials, electrical, thermal, magnetic and optical properties of materials, tailoring materials for application development. Techniques of Materials characterization, Nanomaterials and Nanotechnology, and Social Impact. Prerequisites: Two semesters of an introductory physics sequence (PHYS 203A,B or PHYS 205A,B), with minimum grades of C.

476Q-3 Quantum Entanglement. This course provides an introduction to the theory of quantum entanglement and its use in quantum information science, especially for the task of secure communication. Topics include entanglement measures, entanglement transformations and distillation, bound entanglement, and secret key agreement. Co-requisite: PHYS 430. Prerequisite: MATH 412 with a grade of C or better.

500-6 (3,3) Mathematical Methods in Physics. Vector spaces and operators in physics. Hilbert spaces and complete orthonormal sets of functions. Methods for the solution of partial differential equations of physics. Elements and applications of the theory of analytic functions.

510-3 Classical Mechanics. Generalized coordinates and forces. Lagrangian, Hamiltonian, and variational formulations of mechanics. Noether's Theorem. Central forces, oscillations.

520-6 (3,3) Electromagnetic Theory. Determination of static, electrostatic, and magnetostatic fields. Microscopic and macroscopic theory of insulators and conductors. Maxwell's equations; radiation, propagation and scattering of

electromagnetic waves. Electrodynamics and special theory of relativity. Selected topics.

monic oscillator and the hydrogen atom; scattering; approximation and perturbation methods; spin, statistics.

530-6 (3,3) Quantum Mechanics II. Basic principles; the harmonic oscillator and the hydrogen atom; scattering; approximation and perturbation methods; spin, statistics.

531-6 (3,3) Advanced Quantum Mechanics. Quantum theory of radiation; applications of field theory to elementary particles; covariant quantum electrodynamics; renormalization; special topics. Content varies somewhat with instructor. Prerequisite: PHYS 530. Special approval needed.

535-6 (3,3) Atomic and Molecular Physics II. Recent experimental methods in atomic and molecular spectroscopy with applications. Detailed quantum mechanical and group theoretical treatment of atomic and molecular systems. Reactions between atomic systems. Special approval needed.

545-6 (3,3) Statistical Mechanics II. Principles of classical and quantum equilibrium statistics; fluctuation phenomena; special topics in equilibrium and non-equilibrium phenomena.

550-3 Computational Physics. Using modern computers to solve physics problems. Integration of ordinary and partial differential equations, interpolation and extrapolation, finite element analysis, linear and nonlinear equations, eigensystems, optimization, root finding, Monte Carlo simulations, etc.

560-6 (3,3) Nuclear Physics II. Fundamental properties and systematics of nuclei, scattering theory, nuclear two-body problem, nuclear models, nuclear many-body problem, electromagnetic properties of nuclei, radioactivity, nuclear reactions. Prerequisite: PHYS 530. Special approval needed from the instructor.

565-6 (3,3) Solid State Physics II. Fundamental concepts in solid state physics. Lattice vibrations, band theory of solids, the Fermi surface, dynamics of electrons. Transport, cohesive, optical, magnetic and other properties of solids. Special approval needed from the instructor.

570-1 to 36 Special Projects in Physics. Each student works on a definite investigative topic under the supervision of a faculty sponsor. The projects are taken from the current research in the department. Resourcefulness and initiative are required. Graded S/U only. Special approval needed from the instructor.

571-6 (3,3) X-Ray Diffraction and Electron Microscopy. (See ME 504.)

575-1 to 12 (1 to 4 per topic for a maximum of three topics)

Special Topics in Physics. The courses reflect special research interests of the faculty and current developments in physics. They are offered as the need arises and interest and time permit. Students are required to give presentations. Special approval needed from the instructor.

581-1 to 3 (1,1,1) Graduate Seminar. Lectures on special topics by students, faculty, or invited scholars; participation is required of all graduate students. For credit each student may present a seminar in the form of a lecture on a theoretical or experimental topic, a demonstration experiment or apparatus critique. Graded S/U only.

598-1 to 50 (1 to 12 per semester) Research. Maximum credit 50 hours. Graded S/U only. Special approval needed from the instructor.

599-1 to 6 Thesis.

600-1 to 30 Dissertation. Minimum 24 credit hours required for Ph.D degree. Special approval needed from the instructor.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded S/U or DEF only.

699-1 Postdoctoral Research. One credit hour per semester. Concurrent enrollment in any other course is not permitted. Must be a Postdoctoral Fellow.

Physiology

(See Molecular, Cellular and Systemic Physiology for program description)

Plant Biology

www.plantbiology.siu.edu/
plant-biology@plant.siu.edu

COLLEGE OF SCIENCE

Graduate Faculty:

Anterola, Aldwin M., Associate Professor, Ph.D., Washington State University, 2001; 2005. Metabolic pathways, Medicinal compounds, Nutraceuticals, biosynthesis of natural products.

Ashby, William C., Professor, *Emeritus*, Ph.D., University of Chicago, 1950, 1960.

Baer, Sara, Professor, Ph.D., Kansas State University, 2001; 2004. Ecosystem ecology, nutrient cycling, restoration ecology, experimental design.

Battaglia, Loretta, Associate Professor, Ph.D., University of Georgia, 1998; 2003. Community ecology, wetland ecology, invasive species, climate change, multivariate methods.

Bozzola, John J., Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1975; 1983.

Crandall-Stotler, Barbara, Professor, *Emerita*, Ph.D., University of Cincinnati, 1968; 1970.

Ebbs, Stephen, Professor and *Chair*, Ph.D., Cornell University, 1997; 1999. Plant physiology. Ecotoxicology, biogeochemistry of environmental contaminants, phytoremediation, and other phytotechnologies.

Garwood, Nancy, Adjunct Professor, Ph.D., University of Chicago, 1979; 2005. Tropical botany, including community ecology, seed germination, seedling morphology, and systematics.

Geisler, J.B. Matthew, Associate Professor, Ph.D., The Ohio State University, 1999; 2006. Gene expression and protein interaction patterns, mathematical gene modeling, *Arabidopsis*, yeast and *Drosophila* interactomes.

Geisler-Lee, Jane, Adjunct Assistant Professor, Ph.D., The Ohio State University, 2002; 2007. Systems biology, cell wall, suberin, *Onoclea sensibilis*, genomics, transcriptomics, metabolic pathways, sporogenesis, rhizome development.

Gibson, David J., Distinguished Professor, Ph.D., University of Wales, 1985; 1992. Botany, plant ecology, population ecology, community ecology, grasslands, forests, Illinois prairie, agroecology, invasive species.

Lightfoot, David A., Professor, Ph.D., University of Leeds, 1985; 1991. Biotechnology (molecular); nitrogen assimilation; genetics and development.

Matten, Lawrence C., Professor, *Emeritus*, Ph.D., Cornell University, 1965; 1965.

Mohlenbrock, Robert H., Distinguished Professor, *Emeritus*, Ph.D., Washington University, 1957; 1957.

Neubig, Kurt M., Assistant Professor, Ph.D., University of Florida, 2012; 2015. Plant systematics, phylogenetics, floristics, DNA barcoding and pollination biology.

Nickrent, Daniel L., Professor, *Emeritus*, Ph.D., Miami University (Ohio), 1984; 1990. Plant systematics and molecular evolution; biology of parasitic flowering plants.

Renzaglia, Karen, Professor, Ph.D., Southern Illinois University Carbondale, 1981; 2003. Botany, Plant Morphology, land plant phylogeny, plant anatomy,

ultrastructure, morphogenesis, bryophytes, pteridophytes, and spermatogenesis.

Richardson, John A., Associate Professor, *Emeritus*, M.F.A., Ohio University, 1969; 1969.

Robertson, Philip A., Professor, *Emeritus*, Ph.D., Colorado State University, 1968; 1970.

Sipes, Sedonia D., Associate Professor, Ph.D., Utah State University, 2001; 2001. Plant-insect interactions, pollination ecology, evolutionary ecology, chemical ecology, and systematics.

Tindall, Donald R., Professor, *Emeritus*, Ph.D., University of Louisville, 1966; 1966.

Vitt, Dale H., Distinguished Professor, *Emeritus*, Ph.D., University of Michigan, 1970; 2000.

Weber, Jennifer., Adjunct Assistant Professor, Ph.D., University of CA, Irvine, 2012; 2016. Evolutionary ecology, including breeding system evolution, pollination biology, population genetics and climate change biology.

Wood, Andrew J., Professor, Ph.D., Purdue University, 1994; 1996. Botany, biotechnology, biochemistry, desiccation, drought, genetics, horticulture, molecular biology, plant biology, plant physiology, stress.

Yopp, John H., Professor, *Emeritus*, Ph.D., University of Louisville, 1969; 1970

The Department of Plant Biology offers a graduate program leading to the degrees of Master of Science, Master of Science in Biological Sciences, Master of Science in Education in the Biological Sciences, and the Doctor of Philosophy. The first master's degree was granted in 1948, and the first Ph.D. degree in 1965.

An advisory committee of faculty members from plant biology as well as other departments helps design individualized programs to meet the specific educational goals and career aspirations of each student. The broadly diversified faculty of the department provide research emphases in ecology and environmental science, systematics and biodiversity, and molecular biology and physiology. Graduate degrees in plant biology will be awarded to students in recognition of their ability to do independent research as evidenced by the acceptance of a thesis or dissertation and the demonstration of competent scholastic ability.

The Department of Plant Biology is housed in various major teaching and research facilities on the campus of Southern Illinois University (SIU) including Life Science II and Life Science III. Faculty members provide research and laboratory facilities for students. The department supplies centralized facilities including laboratories for basic computing, Geographic Information Systems (GIS), and molecular biology, as well as herbaria, growth chambers, field sites and greenhouses. Excellent cooperative research arrangements are available for activities including electron microscopy, chemical analyses and research photography. Southern Illinois University is strategically located in the transition zones of several North American biomes and is within a one hour drive to spectacular natural areas including Pine Hills Research Natural Area, Cypress Creek Bioreserve, Garden of the Gods, and Little Grand Canyon.

Admission

Applications should be completed online addressed to the Director of Graduate Studies of the department and must include a completed application form, three letters of recommendation, official transcripts of all institutions of higher learning attended, GRE scores including the verbal, quantitative and analytical portions of the examination and grade point average. Students must meet both Graduate School and Departmental admission requirements. Financial assistance is available on a competitive basis. To be considered for financial support a financial assistance form must also be submitted. Acceptance to the department is contingent on availability of faculty to advise the student, research space and facilities, and satisfactory evidence of funding to complete the degree program (e.g., teaching assistantship, research assistantship, or fellowship). International students whose native language is not English must have a minimum of 550 or the equivalent electronic score on the TOEFL test.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Plant Biology. Applicants must pay this fee by credit card.

Applicants for the Master's degree must have a Bachelor's Degree (or equivalent) in a life science. A student who does not meet these requirements may petition for admission to the department, or register as a regular nondeclared graduate student. Either prior to admission or during their programs, students must complete a course in each of the following categories: 1) plant systematics or plant diversity, 2) plant physiology, cell biology or molecular biology, and 3) plant ecology or environmental science. A course in plant morphology or plant anatomy is strongly recommended. Applicants to the Ph.D. program must have a Bachelor's degree in a life science. A student who does not meet these requirements may petition for admission to the department. Either prior to admission or during their programs, students must complete a course in each of the following categories: 1) plant systematics or plant diversity, 2) plant physiology, cell biology or molecular biology, and 3) plant ecology or environmental science. A course in plant morphology or plant anatomy is strongly recommended. All deficiencies, as determined by the student's advisory committee, must be removed during the first year by taking appropriate courses (graduate or undergraduate) with grades of *B* or better in each course. Criteria for admission include GPA (3.25 or higher), GRE scores, letters of recommendation, transcripts and availability of faculty, space and facilities. To be admitted into the program, at least one faculty member must be willing to serve as major advisor or co-advisor if the student desires to work in the Forestry or Plant, Soil and Agricultural Systems departments. Students desiring financial assistance for Fall semester admission should note that the deadline for fellowship and assistantship applications is January 15th. Application forms are available from the Director of Graduate Studies in the Department of Plant Biology or the Departmental website.

Accelerated Entry into the Doctoral Program

A student who enters a master's program in plant biology may, if deemed capable, be permitted to apply to be accelerated into a program leading directly to a Ph.D. degree, subject to the following conditions and specifications. In order to qualify for

consideration, each endorsed student must: (a) have been in the SIU plant biology graduate program no less than one or more than two academic terms when proposed, (b) have a graduate grade point average of 3.75 or better, (c) have no grade in any course (conditional or otherwise) in his/her graduate record of less than *B* and (d) be deemed by the Evaluation and Awards Committee as having superior capabilities.

Once advanced into the doctoral program by the Graduate School, the student shall be eligible to qualify for graduate assistance totaling no more than 60 months. Once in the doctoral program, the student is subject to all of the academic, retention, and exit requirements for a regular doctoral program.

If for any reason, a student who has been admitted into the accelerated entry program fails to complete the doctoral program successfully that student shall not automatically be re-admitted into the master's program. Instead, the student may (if so desired) make formal application for admission into the master's program in plant biology.

Advisement

Following admission to the department and before registration for course work, the student must consult a staff member representing the field of major interest or, if this is unknown, the Director of Graduate Studies of the department, for assistance in planning the first registration. At registration, deficiencies and specific departmental requirements must be considered first.

Within the first semester of the program, the student must select a faculty member who is willing to serve as the major adviser. The major adviser in consultation with the student will then select appropriate faculty members to comprise the advisory committee. For the master's degree program, a minimum of three people shall make up the advisory committee, two of whom must be voting members of the Plant Biology Department. The advisory committee for the Ph.D. degree program will be composed of at least five people, three of whom must be voting members of the plant biology faculty and one who must be from outside the department. The Director of Graduate Studies is an ex-officio member of each graduate advisory committee. The duties of the advisory committee are to:

1. plan, approve and file with the Director of Graduate Studies the program of study, and advise the student on his/her research program especially during the first semester of the student's program;
2. read, evaluate and file with the Director of Graduate Studies the student's research prospectus by the end of second semester of the student's program;
3. monitor the student's progress and make any necessary changes in the program, while providing advice and direction on the student's research problem;
4. annually assess the student's progress and file recommendations as to retention or dismissal from the program with the Evaluation and Awards Committee;
5. participate in and grade the written and oral preliminary examinations for the Ph.D. degree;
6. read and evaluate the student's thesis or dissertation and

make suggestions for improvement; and

7. administer the defense and final examination of the thesis or dissertation.

In either degree program, following establishment of the advisory committee and before advance registration for the second term, the student must meet with the advisory committee to discuss the program of courses for the degree and plans for research. In this regard, the committee is empowered to require work in areas with which the student's interests are allied. The advisory committee will advise the student on the selection of readings on general and historical topics of importance that may not be encountered in formal courses. Copies of the approved program of courses and the plans for research must be placed in the departmental files by the beginning of the second semester of study. An approved research prospectus must be completed and filed with the Director of Graduate Studies by the end of the second semester.

Research and Training Assignments. Research is required of each student in the program. In addition, each term the student must be engaged in a training assignment which supplements formal course work through professional activities such as research or teaching. The assignment varies according to the needs, professional goals, and competencies of the student, and increases in responsibility as the student progresses. The assignments require from ten to twenty hours of service per week.

Academic Retention

The general regulations of the Graduate School with respect to academic retention shall be followed. In addition, no course in which the grade is below *C* shall count toward the degree or fulfillment of any requirement, but the grade will be included in the grade point average. No more than five hours of *C* work in graduate courses will count toward the degree.

All students are subject to regular review by the department's Evaluation and Awards committee. Those not attaining the minimum acceptable academic standards or who in any way fail to meet any other scheduled requirements or standards may be dropped from the program.

Program and Course Requirements

Appeals

Appeals for variations from the departmental graduate program must be presented in writing to the plant biology graduate faculty meeting as a committee of the whole. Appeals must receive approval from a majority of the total plant biology graduate faculty.

Appeals for changes in the student's graduate advisory committee or changes in the original program must be approved in the following order: (1) approval from adviser, (2) approval from the remaining members of the student's advisory committee. Student appeals for change of major advisor must be presented in writing to the plant biology graduate faculty meeting as a committee of the whole. Appeals must receive approval from the Evaluation and Awards Committee.

The Master's Degree

A minimum of 30 hours of graduate credit is required beyond

the bachelor's degree. Those 30 hours should include 1) a minimum of 22 hours of graded credit hours in Plant Biology or related disciplines (9 of these 22 may be graded individualized instruction courses); 2) seminars as specified below (generally 4 credit hours); 3) and at least 4 (maximum 6) hours of thesis (PLB 599). All master's degree students must earn a minimum of 2 credit hours in graduate seminars during each year of residence. Students may take any seminar course approved by their committee, with the following constraints: 1) student must take PLB 590 their first fall term, and 2) student must take PLB 580 each spring semester of residency. A graduate minor of at least 10 graduate hours may or may not be required; this is to be determined by the student and the advisory committee.

As noted in the admission requirements, students will take, either prior to or during their program, at least one course in each of the following categories: 1) plant systematics, 2) plant physiology, cell biology, or plant molecular biology, and 3) ecology or environmental science. Courses in plant anatomy and genetics are strongly recommended also if they have not been taken prior to the program.

A program of study must be approved by the student's advisory committee and be submitted to the Director of Graduate Studies by the end of the first semester of the student's program. Changes made after the first semester of the student's program must be approved by the student's advisory committee.

At the time of completion of the thesis, the student must schedule a public seminar presentation of the thesis material and a comprehensive examination over the thesis and related subject matter.

The Ph.D. Degree

Course work for the degree shall include 1) a minimum of 20 graded credit hours in plant biology or related disciplines; 2) minimum of 2 tools courses (generally 6 to 12 graded credit hours); 3) seminar credits as specified below (generally 8 to 10); and 4) minimum of 30 credit hours of dissertation research (PLB 600). All Ph.D. students must earn a minimum of 2 credit hours in graduate seminars each year until they advance to candidacy. Students may take any seminar course approved by their committee, with the following constraints: 1) student must take PLB 590 their first fall term, and 2) student must take PLB 580 each spring semester until they advance to candidacy.

As noted in the admission requirements, students will take, either prior to or during their program, courses in all of the following categories: 1) plant systematics, 2) plant physiology, cell biology or plant molecular biology, and 3) ecology or environmental science. Courses in plant anatomy and genetics are strongly recommended if they have not been taken prior to starting the program.

A program of study must be approved by the student's advisory committee and be submitted to the Director of Graduate Studies by the end of the first semester of the student's program. Changes made after the first semester of the student's program must be approved by the student's advisory committee.

Tools. The student shall demonstrate knowledge in two research tools approved by the student's advisory committee. A tool is defined as training in laboratory (or field) methods,

instrumentation, technology, or communication skills including languages that are integral to the pursuance of research. Specific tool requirements will be determined by the student's advisory committee. Courses used to satisfy tools requirements shall not be applied toward the total number of hours required for the degree. The foreign language requirement can be met by earning a grade of *B* or better in appropriate 400 level course (Latin, French, German, Spanish or Russian). The requirement can also be met by passing an Educational Testing Service (ETS) examination in French, German, Spanish or Russian. The ETS passing level for French and German is 465 and for Russian and Spanish it is 440. A statistical tool requirement can be satisfied by earning a *B* or better in one or more graduate level statistics courses. Course recommendations for statistical tools include Quantitative Plant Ecology (PLB 444), Biostatistics (PLB 557), Advanced Biostatistics (PLB 558). Other courses can be used to satisfy a statistical tool requirement if deemed acceptable by the student's advisory committee. Tool requirements other than language or statistics may be completed by earning a *B* or better in courses approved by the student's advisory committee, including courses from outside the department.

Concentration in Ecology. Students opting to declare ecology as a concentration shall follow the same program as students in the Plant Biology Ph.D. degree program that do not declare a concentration subject to the following courses: Course work for the concentration in ecology shall consist of a minimum of 20 semester hours at the seminar, readings, research, dissertation, and research tool requirements. The Seminar in Plant Biology (a) Ecology (PLB 589A) or equivalent must be taken every Fall and Spring semester until student achieves candidacy. The student's advisory committee shall consist of at least five members with a majority from the Department of Plant Biology and at least two members from outside the Department of Plant Biology. For the Preliminary Examination, the field of expertise shall be ecology. One of the two research tools will be statistics, and the other should demonstrate knowledge defined as training in laboratory (or field) methods, instrumentation, technology, or communication skills including language that are integral to the pursuance of ecological research.

Preliminary Examination. The preliminary examination will consist of two parts, a written examination and an oral examination. The written and oral examinations shall emphasize competence in:

1. One of the fields of expertise within the Department: plant systematics and plant diversity; plant physiology, cell biology and molecular biology; or ecology.
2. The student's designated area of specialization (as determined by the advisory committee), and
3. The student's research tools (see above) and a basic, general knowledge of Plant Biology (as defined by the PLB Faculty). These three components of the written examination will be administered as separate entities. Subject matter covered in the two specialization examinations may be excluded from the general component at the discretion of the advisory committee.

The student, with the approval of his/her graduate advisory

committee, will register with the Director of Graduate Studies to take the examination. The Director of Graduate Studies will then appoint a faculty member who is not on the student's advisory committee to chair the examination committee (EC) and administer both the written and oral examination. The Chair of the examination committee will solicit questions from the student's advisory committee and from the faculty at large. Upon receipt of these questions, the Chair of the examination committee will call the committee together to construct and plan the written part of the examination. The student will be allocated one eight-hour block of time to complete each of the three components of the examination. The student may request additional time.

The student must pass all parts of the written examination to proceed to the oral examination. Pass means that the student has demonstrated through clear written statements a clear understanding of the topics presented in the written examination. A vote of the EC to pass or fail must be taken immediately following the grading of the written examination. Passing of the written examination will be determined by simple majority vote of the EC. If the student fails one or more of the three components of the examination, he/she must be reexamined on the failed components. If the student fails any part(s) of the general examination, he or she must be reexamined on the failed part(s). In consultation with the advisory committee, the EC chair will schedule and administer the reexamination. The reexamination may not be taken during the same academic term. The student must pass the written examination by the second attempt to continue in the program.

Following passage of the written portion of the examination, the EC chair will schedule and administer the oral portion of the examination. The oral examination must be scheduled not sooner than 10 working days nor more than 30 working days from the completion date of the written examination. The EC chair will not participate in the questioning of the student and does not have a vote regarding the proceedings. The oral preliminary examination must be announced at least 10 working days before the examination is to be given. The examination may only be scheduled when classes are in session, including finals week. The examination shall last at least two hours and not more than four hours and should be scheduled to allow attendance of a maximum number of faculty members from the student's department and all of the preliminary examination committee members. The student's answers to the written examination will be made available to the graduate faculty (upon request) before the oral part of the preliminary examination. All attending graduate faculty members will be given the opportunity to express their opinion on the examination. A vote on performance in the oral examination must be taken immediately following completion of the examination. A pass requires a vote with no more than one dissenting member of the preliminary examination committee, and may have conditions. If the vote is pass, then two levels may be recognized: Pass and Pass with Distinction. A student will be allowed two attempts to pass the oral preliminary examination. Should a student fail a second attempt to pass the preliminary examination, he/she will be dropped from the program. Doctoral students entering the program with a master's degree must take the preliminary exam by the end of 30 months and must pass the preliminary

examination and be admitted to candidacy by the end of 36 calendar months after first registering in the doctoral program.

Final Examination (Dissertation Defense). The final examination will be oral. It must be preceded during that semester by a public seminar on the student's research findings. The student's advisory committee will notify the Director of Graduate Studies of its recommendation for the date of the final examination at least two weeks prior to the seminar. The seminar and examination must be announced at least 10 working days before the seminar and examination. The seminar and examination must be held when classes are in session, including finals week. The final examination shall last for no more than 3 hours. It is to cover the dissertation and related subject matter. Passage of the final oral examination should be construed to mean there shall be no more than one dissenting vote of the advisory committee. Should a student fail a second attempt to pass the final examination, she/he will be dropped from the program.

Courses (PLB)

For all field courses in plant biology, students will be assessed a transportation fee. In addition, certain courses may require the purchase of additional materials and supplies, generally \$1 to \$5 in total cost.

400-4 Plant Anatomy. This course is an introduction to the differentiation, diversification and structure of plant tissues and organs, with emphasis on the organization of seed plants. Laboratory will include instruction in the techniques of microscopy used in the study of plant structure. Two lectures and two laboratories per week. Lab fee: \$50. Prerequisite: BIOL 200B or PLB 200.

406-3 Bryology. An introduction to the biology of mosses, liverworts, and hornworts, with emphasis on structure, development, and phylogeny, but also including the study of their genetics, biochemistry, and physiology. Two lectures and one laboratory per week. Lab fee: \$15. Prerequisite: PLB 300.

415-5 Morphology of Vascular Plants. This course examines the external form, internal structure and relationships of vascular plants. Three lectures and two laboratories per week. Lab fee: \$40. Prerequisite: BIOL 200A and BIOL 200B, or PLB 200; PLB 300 and PLB 400 recommended.

416-3 Limnology. (Same as ZOOL 415) Lakes and inland waters; the organisms living in them, and the factors affecting these organisms. Two lectures and one 4-hour laboratory alternate weeks. Prerequisite: BIOL 307 with a grade of C or better. Laboratory/Field Trip Fee: \$15.

419-3 Plant Molecular Biology. (Same as PSAS 419, CSEM 419) A survey of molecular phenomena unique to plant systems. Topics will include: genome organization and synteny between plant genomes, transcriptional and post-transcriptional control of gene expression, signal transduction, epigenetics, plant-pathogen interactions and responses to biotic- and abiotic-stresses. Prerequisite: BIOL 305 or CSEM 305. Restricted to junior standing.

425-4 Environmental Physiology of Plants. (Same as CSEM 425; Same as PSAS 425) The environmental physiology of plants focuses on the 1) influence of abiotic factors (e.g., light, water, temperature, nutrients, pollutants) on growth, development,

and yield; 2) mechanisms by which plants respond to these abiotic factors; 3) use of biotechnology to increase abiotic stress tolerance in model and crop plants. Prerequisite: PLB 320 or CSEM 409. A \$35 laboratory fee will be assessed.

427-5 Plant Biochemistry. (Same as CSEM 427 and PSAS 427) Exploration of fundamental biochemical pathways in plants with an emphasis upon carbon and nitrogen metabolism. Prerequisite: PLB 320 or consent of instructor. Lab fee: \$35.

433-3 to 7 Introduction to Agricultural Biotechnology. (Same as AGSE 433, CSEM 433, HORT 433, PLB 433, PSAS 433) This course will cover the basic principles of plant and animal biotechnology using current examples; gene mapping in breeding, transgenic approaches to improve crop plants and transgenic approaches to improve animals will be considered. Technology transfer from laboratory to marketplace will be considered. An understanding of gene mapping, cloning, transfer and expression will be derived.

435-3 Plant-Insect Interactions. (Same as ZOOL 435) Plants and insects have played major roles influencing each other's evolutionary diversification. The course will be an evolutionary and ecological examination of the interactions between plants and insects. Topics will include herbivory, pollination, relationships, ant-plant mutualisms, host plant choice, specialized vs. generalization relationships, seed and fruit dispersal, coevolution/cospeciation, and chemical ecology. Prerequisite: BIOL 200A and 200B or equivalent, BIOL 307 or equivalent.

438-3 Plant and Animal Molecular Genetics Laboratory. (Same as AGSE 438, CSEM 438, PSAS 438, ZOOL 438) Arabidopsis and Drosophila model organisms, lab-based training in laboratory safety, reagent preparation, phenotype analysis, genetics, DNA and RNA analysis, PCR, cDNA construction, cloning and sequencing of genes. Includes plant and bacterial transformation, and a population level analysis of genetic variation using RAPD markers in grasses and Alu insertion in humans. Two 2-hr labs and one 1-hr lecture per week. Prerequisite: BIOL 305 or equivalent or consent of instructor. Lab fee: \$30.

440-3 Grassland Ecology. This course examines grassland structure and function in relation to various biotic and abiotic factors. Field trips will visit local grasslands. Two lectures and one 4-hour lab per week. Laboratory fee: \$50. Prerequisite: BIOL 307 or consent of the instructor.

443-3 Restoration Ecology. (Same as ZOOL 443) Ecological restoration tests current understanding of ecosystem assembly and function. This course applies ecological theory to restoration, with an emphasis on factors influencing plant community assembly and evaluating restoration success. Two lectures a week and one four-hour lab alternate weeks. Prerequisite: BIOL 307. Lab Fee: \$15.

444-4 Ecological Analysis of Communities. (Same as ZOOL 444) Includes concepts and methods pertaining to the analysis of ecological data. Approaches will include a variety of methods for analyzing multivariate ecology, diversity, pattern, and spatial data. Laboratory will include the computer application of these concept and methods to field situations. Two lectures and one 4 hour lab per week. Prerequisite: PLB/ZOOL 360, BIOL 307. Lab fee \$15.

445-4 Wetland Plant Ecology and Management. (Same as

ZOOL 445) This course provides students with experience in wetland ecology and management with an emphasis in wetland functioning, field sampling, and identification of common wetland plants. Prerequisite: either BIOL 200B or PLB 200; and BIOL 307; or consent of instructor. Two lectures and one 4-hour lab per week. Lab fee: \$25.

449-3 Plant Systematics and Evolution. Plant systematics and evolution using traditional and molecular characters. Includes classification methods, phenetics, cladistics, maximum likelihood, and plant molecular evolution. Prerequisite: PLB 304 (or equivalent) or consent of instructor.

451-3 Flora of Southern Illinois. Exposure to the major upland and lowland communities of southern Illinois with an emphasis on the identification, distribution and ecology of the natural and introduced floristic components. This is a field-based course wherein the students travel to local areas for plant identification. Each week, 4-8 hours per weekly session is spent in field work and travel to specific field sites is required via a university vehicle. Lab fee: \$15. Prerequisite: PLB 304 or consent of instructor.

452-4 Plant Population Ecology. This course covers principles and research techniques of plant population ecology including the spatial, age, size, and genetic structures of plant populations. The origin of these different aspects of population structure, their influences upon each other and their temporal dynamics are also examined. Two lectures and one 4-hour lab per week. Prerequisite: BIOL 307 or consent of instructor. Lab fee: \$35.

455-3 Genome Evolution. (Same as ZOOL 450) This course introduces the diversity of genomes and the evolutionary forces shaping them. Molecular evolution from the level of single nucleotides to whole genomes will be covered. Prerequisites: BIOL 305 and BIOL 304.

471-3 Introduction to Systems Biology. (Same as ZOOL 472) The bioinformatic analysis of large genomic and post-genomic data sets. Integration of gene regulation, protein interaction, metabolite and hormonal signaling provides an understanding of basic cellular circuitry networks. Examine redundancy, robustness and decision making in biological systems. Lab includes databases, tools, and manipulation of large data sets. Prerequisite: BIOL 305 or CS 330. Lab fee: \$15.

475-3 Advanced Cell Biology. Cell structure at molecular and cytological levels. Includes discussions of research methods, plasma membrane, cell exterior and recognition, the endomembrane system and related organelles, self-replicating organelles, the cytoskeleton, nuclear structure and function in cell replication, cell differentiation and response, and eukaryotic cell evolution. Prerequisite: BIOL 306 or equivalent.

476-2 Advanced Cell Biology Laboratory. Laboratory course to accompany Plant Biology 475. Light and electron microscopy, cell culturing, biochemical methods, and experimental protocols are used to study the structure of cell membranes, intracellular organelles, including the Golgi apparatus, ER, mitochondria, plastids, lysosomes, the cytoskeleton and nucleus. Prerequisite: PLB 475 or concurrent enrollment.

490-3 Energetics, Food Webs, and Ecosystems. (Same as ZOOL 490) This course places conservation of particular species into the context of community and ecosystem management. Approaches to qualifying energy needs of individual species will be extended to models of trophic networks among multiple

species. Food web structure and function, species interactions, and resilience to species loss species invasions, and environmental changes will be examined in light of landscape processes. Prerequisite: BIOL 307 or consent of instructor.

493A-1 to 4 Research Topics in Plant Biology-Ecology. Individual laboratory or field research under supervised direction. Does not count for thesis (PLB 599) or dissertation (PLB 600) credit. Special approval needed from the departmental chair.

493B-1 to 4 Research Topics in Plant Biology-Systematics. Individual laboratory or field research under supervised direction. Does not count for thesis (PLB 599) or dissertation (PLB 600) credit. Special approval needed from the departmental chair.

493C-1 to 4 Research Topics in Plant Biology-Physiology/Molecular Biology. Individual laboratory or field research under supervised direction. Does not count for thesis (PLB 599) or dissertation (PLB 600) credit. Special approval needed from the departmental chair.

501-4 (2,2) Research Transmission Electron Microscopy. (See SCI 501A, B.)

502-4 (2,2) Research Scanning Electron Microscopy. (See SCI 502A, B.)

520-3 Plant Growth and Development. (Same as PSAS 520) Physiological control of developmental processes. Emphasis on exogenous growth-regulating compounds and their behavior in plants. Prerequisite: PLB 320 or consent of instructor.

523-3 Watershed Science. (Same as ZOOL 523) This course is part the SIU IGERT program and will focus on ecological, geomorphic, and hydrological concepts related to watersheds including hydrograph generation, frequency analysis, erosional and depositional processes, channel geomorphology, water quality and biotic integrity, and structure and function of stream ecosystems. This course will include readings and discussions and will feature guest lecturers from on specific topics. Restricted to graduate students (masters and doctoral).

524-3 Gene Regulatory Networks. (Same as PSAS 524) An examination of the integration of genes into development, abiotic stress response, metabolic and light gene regulatory networks. Includes motif discovery, cis-regulatory elements, discussion of transcription factor families, RNA interference, network theory, feedback loops, cytoplasmic inheritance, maternal effect, post-transcriptional and post-translational regulation. Prerequisites: BIOL 305 or PLB 471.

525-2 to 16 (2 to 4, 2 to 4, 2 to 4, 2 to 4) Cell Biology Research Techniques. A special techniques course designed for graduate students specializing in cell studies. Provides instrumentation training, with emphasis on application of the method to a research project. **(a)** Quantitative Cytology. **(b)** Immuno-Labeling and Qualitative Histochemistry. **(c)** Deep Etching Techniques in Electron Microscopy. **(d)** Cell Fractionation and Biochemical Techniques. Course fee: \$50.

530-3 Plant Ecophysiology. (Same as PSAS 530) A study of the physiological processes that influence the growth, reproduction, adaptation, and geographic distribution of plants. The ecophysiology of plant stress and plant interactions. Prerequisite: PLB 320 or CSEM 409; BIOL 307.

533-3 Plant Growth and Morphogenesis. A study of the role of the environmental variables (light, temperature, etc.) and

phytohormones in the growth and morphogenesis of intact plants and tissue cultures. The theories of plant organogenesis and the synthesis, translocation, regulation and mode of action of the major classes of phytohormones will be treated in light of the most recent literature. Three lectures per week. Prerequisite: PLB 320 or consent of instructor.

534-2 Techniques in Studies of Plant Growth and Development. Instruction in laboratory techniques used in the study of the role of environment and natural plant growth substances in plant morphogenesis. Two two-hour laboratories per week. Prerequisite: PLB 320 or consent of instructor.

545-3 Ecosystem Ecology. (Same as ZOOL 545) Fundamentals of and human modification to atmospheric chemistry and cycling of major nutrients in terrestrial ecosystems are covered in the context of global change. Laboratory exercises provide methodology and analytical approaches to studying ecosystem structure and function. Two lectures a week and one four-hour lab alternate weeks.

546-2 Nutrient Cycling Methods. Research in ecosystem ecology requires a basic understanding of biochemistry. Analytical methodology used to study pools and transformations of major nutrients in terrestrial ecosystems, applicable to freshwater systems, will be the focus of this laboratory course. Three hour laboratory every other week. Prerequisites: PLB 545 or concurrent enrollment. Course fee: \$30.

547-3 to 8 Tropical Studies in Costa Rica. Credit for field courses taken under the jurisdiction of the Organization for Tropical Studies in Costa Rica. Courses and credits will vary. Prerequisite: approval of OTS Advisory Committee at Southern Illinois University Carbondale.

554-1 to 4 (1,1,1,1) Evolution Seminar. (Same as ANTH 554, MBMB 554, ZOOL 554) Advanced topics in evolutionary biology including genetics & development, evolutionary ecology, phylogeny, paleontology, biogeography, population genetics, molecular ecology, speciation, molecular evolution, and macroevolution. Topics will vary each semester. Seminar format group discussions and student presentations. Graded *S/U*. Special approval needed from the instructor.

556-3 Phylogenetics. (Same as ANTH 554, MBMB 554, ZOOL 556) An advanced introduction to modern methods of phylogenetic inference, emphasizing both theoretical background concepts and numerical approaches to data analysis. Topics include properties of morphological and molecular characters, models of character evolution, tree estimation procedures, and tree-based testing of evolutionary hypothesis. Special approval needed from the instructor.

557-4 Biostatistics. (Same as ZOOL 557) Basic biostatistical procedures used by researchers in life sciences and related fields. Topics include descriptive statistics, probability and distributions, statistical models, likelihood methods, experimental design, analysis of variance, regression, correlation, and the use of statistical software.

558-4 Advanced Biostatistics. (Same as ZOOL 558) Advanced biostatistical procedures used by researchers in life sciences and related fields. Topics include multiple and logistic regression, randomization tests, jackknife and bootstrap. Mantel tests, BACI designs, MANOVA, repeated measures analysis, and the use of statistical software. Prerequisite: PLB 557 or equivalent, ZOOL 557.

570-2 to 3 Graduate Readings in Plant Biology. A course of individually assigned readings in botanical literature. Every semester. Special approval needed from the instructor. Graded *S/U* only.

571-4 Genomics of Eukaryotes: Bioinformatics. (Same as PSAS 571) Genomics, Proteomics and Bioinformatics are rapidly making important contributions to the Life Science through biotechnology. An appreciation of the genomic tools is important to all in agriculture and biology. The relationships between molecular biology bioinformatics and the biotechnology industry will be explored. Short independent practical projects in genomics, proteomics or bioinformatics will be pursued.

578-3 Population Genetics. (Same as ZOOL 578) Genetic structure of populations, factors causing changes and principles governing rate and direction of change. Three lectures per week. Prerequisite: BIOL 304 and BIOL 305.

580-1 to 6 Departmental Seminar. Student presentations and critiques of original research, including presentations by occasional invited speakers. Graded *S/U* only. Required of all graduate students in residence, when offered.

589-1 to 12 (1 per topic per semester) Seminars in Plant Biology-Ecology. (Same as ZOOL 576) Discussions of current and historical research and literature in various subject areas of plant biology. (a) Ecology, (b) Molecular and Biochemical Physiology and (c) Systematics and Biodiversity. Graded *S/U* only.

590-1 to 3 Introduction to Research. General introduction to research techniques. Techniques to be determined by instructor and students. Summer only. Graded *S/U* only. Special approval needed from the instructor and the department.

591-2 to 9 Research. Assignments involving research and individual problems. (a) Anatomy; (b) Bryology; (c) Ecology; (d) Morphology; (e) Mycology; (f) Paleobotany; (g) Pathology; (h) Photography; (i) Phycology; (j) Physiology; (k) Systematics. Master's students may use this for their research for their thesis. Summer only. Graded *S/U*. Special approval needed from the instructor and the department.

599-2 to 9 Thesis. Course to be taken in the preparation of the Master's thesis. Every semester. Special approval needed from the instructor. Graded *S/U* only.

600-1 to 36 (1 to 12 per semester) Dissertation. Course to be taken in the research for and in writing of the doctoral dissertation. Every semester. Graded *S/U* only. Special approval needed from the instructor.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Plant, Soil and Agricultural Systems

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COLLEGE OF AGRICULTURAL SCIENCES

Graduate Faculty:

Bond, Jason P., Professor, Ph.D., Louisiana State University, 1999; 2000. Nematology and plant pathology.

Chong, She-Kong, Professor, *Emeritus*, Ph.D., University of Hawaii, 1979; 1979.

Choudhary, Ruplal, Associate Professor, Ph.D., Oklahoma State University, 2004; 2009. Biosystems Engineering.

Cook, Rachel L., Assistant Professor, Ph.D., University of North Carolina, 2012.

Diesburg, Kenneth L., Assistant Professor, Ph.D., Iowa State University, 1987; 1989. Turfgrass science.

Doerr, William A., Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1973; 1965.

Fakhoury, Ahmad M., Associate Professor, Ph.D., Purdue University, 2001; 2003. Molecular plant pathology and fungal genetics.

Henry, Paul H., Associate Professor, Ph.D., North Carolina State University, 1991; 1992. Ornamental horticulture.

Jones, Karen L., Professor and *Chair*, Ph.D., Texas A&M University, 1996; 1999.

Kantartzi, Stella, Associate Professor, Ph.D., Aristotle University of Thessaloniki, 2006; 2008. Soybean breeding and genetics.

Klubek, Brian P., Professor, *Emeritus*, Ph.D., Utah State University, 1977; 1978. Soil microbiology.

Legacy, James, Professor, *Emeritus*, Ph.D., Cornell University, 1976; 1977.

Lightfoot, David A., Professor, Ph.D., University of Leeds, 1984; 1991. Agricultural molecular biology and biotechnology.

McGuire, James M., Professor, *Emeritus*, Ph.D., North Carolina State University, 1961; 1993.

Meksem, Khalid, Professor, Ph.D., University of Cologne, Germany, 1995; 2000. Genomics, plant genetics, plant molecular biology and biotechnology.

Midden, Karen L., Professor, M.L.A., University of Georgia, 1983; 1988. Landscape design and sustainable landscape practices.

Olsen, Farrel J., Professor, *Emeritus*, Ph.D., Rutgers University, 1961; 1971.

Pense, Seburn L., Associate Professor, Ph.D., Oklahoma State University, 2002; 2003. Agricultural education.

Preece, John E., Professor, *Emeritus*, Ph.D., University of Minnesota, 1980; 1980.

Schmidt, Michael, Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1994; 1979. Plant breeding.

Shoup, W. David, Professor, *Emeritus*, Ph.D., Purdue University, 1980; 1999.

Stitt, Thomas R., Professor, *Emeritus*, Ph.D., Ohio State University, 1967; 1967.

Stucky, Donald J., Professor, *Emeritus*, Ph.D., Purdue University, 1963; 1970.

Taylor, Bradley H., Associate Professor, Ph.D., Ohio State University, 1982; 1982. Fruit production.

Tweedy, James A., Professor, *Emeritus*, Ph.D., Michigan State University, 1966; 1966. Herbicides and weed control.

Varsa, Edward C., Professor, *Emeritus*, Ph.D., Michigan State University, 1970; 1970. Soil chemistry, fertility, and management.

Walters, S. Alan, Professor, Ph.D., North Carolina State University, 1997, 1998. Vegetable production.

Watson, Dennis G., Ph.D., Michigan State University, 1987; 2002. Agricultural Systems Technology.

Wolff, Robert L., Professor, *Emeritus*, Ph.D., Louisiana State University, 1971; 1972.

The Department of Plant, Soil and Agricultural Systems offers programs of study leading to the Master of Science degree with a major in plant, soil and agricultural systems with concentrations in the areas of crop, soil, and horticultural sciences with an emphasis in environmental studies in agriculture available in each of these three concentrations, as well as a concentration in ecological urban landscapes. The concentrations in crop, soil, and horticultural sciences can be pursued with either a thesis-option or a research paper (non-thesis) option. We offer graduate work in agricultural education and information and agricultural technologies.

Supporting courses in education, communication, engineering, plant biology, microbiology, chemistry, statistics, and other areas essential to research in the student's chosen field may be selected. Supporting courses are selected on an individual basis by the student and the advisory committee. Once the general field has been selected, the research and thesis may be completed in any one of the many divisions of that field. In field crops, the research may be directed toward crop production, management and precision farming, weeds and pest control, or plant breeding, genetics and biotechnology; in horticulture, the research and thesis may be in landscape design, vegetables, tree-fruits, small-fruits, floricultural and ornamental plants, plant tissue culture, or turf management; in soils, the research may relate to soil fertility, soil physics, soil microbiology, soil chemistry, or soil and water conservation; in environmental studies, the research may be directed toward water pollution, reclamation of strip-mined soil, or agricultural chemical pollution problems. Often two of these more restricted areas can be combined in one thesis/research problem.

The concentration in ecological urban landscapes is a non-thesis, non-paper, fully online graduate program with the exception of one required class, the ecological urban landscape practicum. This concentration offers to the student a core understanding of ecological systems in relation to urban landscape and urban agriculture design and management skills. Students in this program will be prepared in decision-making related to outdoor urban spaces using ecological principles and a sound design process with the interest of profiling the environment, the users and the professionals.

Agricultural education coursework is designed for instructors in secondary schools, for students preparing for employment at junior colleges, and for those desiring to continue their education by obtaining a Ph.D. degree. Agricultural information coursework is designed to provide graduate training for

extension agents, agricultural communication professionals, product-education specialists, and others who are interested in agricultural information processing and transfer to a variety of non-student clientele. Agricultural technologies coursework is designed to offer students interested in technology based systems the opportunity to study one or more of the following areas: (a) power and machinery, (b) product handling, processing, and storage, (c) farm equipment evaluation, and (d) precision farming. Each of these areas offers application in agricultural environmental studies.

Students interested in plant, soil and agricultural sciences at the doctoral level can be admitted to a program of study leading to the Ph.D. degree in agricultural sciences, plant biology or through the Environmental Resources and Policy Ph.D. program. The program, which is administered by the Graduate School through the College of Agricultural Sciences, the Department of Plant Biology, or the Colleges of Agricultural Sciences, Liberal Arts, and Science (Environmental Resources and Policy) is adequately flexible to allow students to explore such interests as plant physiology, plant nutrition, chemical control of plant growth, plant genetics, etc.

Admission

Application for admission must include an online application available at gradschool.siu.edu, a statement of interest, college transcripts, and four letters of recommendation. Letters should be requested from four persons who can evaluate the student's academic ability. Final admission to the program and a particular concentration administered by the Department of Plant, Soil and Agricultural Systems is made by the department. Minimal admission requirements to the program are: a) completion of the plant, soil and agricultural systems or agricultural systems undergraduate requirements and b) a minimal grade point average of 2.7 ($A = 4.0$). The students who do not meet the requirement of completing the required courses in the undergraduate program in plant, soil and agricultural systems or agricultural systems may apply to enroll as nondeclared students to make up these deficiencies. Undergraduate coursework taken to correct these deficiencies will not apply to the minimum requirements for the master's degree. Students entering the Plant, Soil and Agricultural Systems graduate program with a GPA below 2.70 are accepted on a conditional basis and must enroll in 12 hours of structured courses at the 400–500 level and make a GPA of 3.0 or be suspended from the program.

Application for admission into the Ecological Urban Landscapes concentration must include an online application available at gradschool.siu.edu, a statement of interest and college transcripts. Final admission to this concentration is made by the department chair. Minimal admission requirements to this program is a minimal grade point average of 2.7 ($A = 4.0$). Students entering the Ecological Urban Landscapes concentration with a GPA below 2.70 are accepted on a conditional basis and must make a GPA of 3.0 in the first semester of coursework or be suspended from the program.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Plant, Soil and Agricultural Systems. Applicants must pay this fee by credit card.

Program Requirements

The crop, soil, and horticultural sciences concentrations can be pursued as a 30 credit hour with thesis program or a 40 credit hour with research paper (non-thesis) option. The ecological urban landscapes concentration is 30 credit hours, 27 online credit hours and 3 credit hours of an applied practicum. These are described below:

Thesis option: If the student submits a thesis, minimum coursework requirements for the master's degree may be fulfilled by satisfactory completion of 30 semester hours of graduate credit. At least 20 hours of that credit must be from structured courses. At the 500 level 15 hours of course credit are required, of which no more than 10 hours may be from unstructured courses. Graduate seminar is required but is not a structured course. Overall, at least 15 semester hours must be from departmental courses.

Research paper (non-thesis option): If the student submits a research paper (non-thesis option) minimum coursework requirements for the master's degree may be fulfilled by satisfactory completion of 40 semester hours of graduate credit. At least 30 hours of that credit must be from structured courses. At the 500 level 18 hours of course credit are required, of which no more than 10 hours may be from unstructured courses. Graduate seminar is required but is not a structured course. Overall, at least 25 semester hours must be from departmental courses.

Students who wish to teach in agriculture education must complete a minimum of 15 hours in agriculture (including agricultural education), six hours of research methods or statistics, and six hours in education or community development. M.S. students usually take 4-6 hours of research or thesis, and complete the additional hours by taking courses in education or agriculture.

Each student, whether in the thesis or non-thesis option, will be assigned a mutually agreed upon major professor to direct the program. The major professor will serve as chair of the student's advisory committee which will consist of at least two members from within the department and may include one member from another department or program. Each master's degree candidate must pass a comprehensive oral examination covering graduate work including the thesis or research paper.

Ecological urban landscapes concentration: Students in the ecological urban landscapes concentration must complete 30 credit hours from the following curriculum which must include the required FOR 528, PSAS 548, FOR 415 and PSAS 583. All of the courses are online except the required practicum which meets five-six days at a site to be announced each semester.

Semester

Fall

PSAS 480-3	Designing Outdoor Spaces
PSAS 563-3	Plants for the Ecological Landscape
FOR 528-3	Urban Tree Management
PSAS 548-2	Fundamentals in Urban Soils
PSAS 565-1	Bee Management in Urban Spaces

Spring

PSAS 469-3	Organic Gardening
GEOG 521-3	Urban Sustainability

FOR 415-3	Urban Ecosystem Management
PSAS 564-3	Growing Fruit in the Urban Environment
PSAS 562-3	Sustainable Landscape Practices

Summer

PSAS 583-3	Urban Ecological Landscape Practicum
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PSAS 590 readings and PSAS 592 special problems - available for students who have completed a course for another degree and needs additional coursework to fulfill 30 credit hours.

Courses (PSAS)

Field trips are required for certain courses.

400-3 Trends in Soil Science and Agronomy. (Same as CSEM 400) A discussion session format will be employed as a means of acquainting students with recent literature and allowing them to remain current with latest developments in their area of specialty. Special approval needed from the department.

401-2 Agricultural Plant Pathology. (Same as CSEM 401) A study of macro and micro-organisms and environmental factors that cause disease in plants of agricultural importance; of the mechanisms by which these factors induce disease in plants; and of the methods for managing diseases and reduce the damage they cause. Special approval needed from the department.

402A-3 Problems in Agricultural Education. (Same as AGSE 402A) Designed to improve the techniques related to award programs and application processes of agricultural education specialists through discussion, application, organization, and assignment to problems in the field of agricultural education. Emphasis will be placed on conceptual understanding of FFA and Agricultural Education award programs, applications, Supervised Agricultural Experience Program, and National Chapter Award Program, affiliated professional partnerships, and external sources for developing the entire Agricultural Education program.

402B-1 to 6 Problems in Agricultural Technologies. (Same as AGSE 402B) Designed to improve the techniques of agricultural mechanization workers through discussion, assignment and special workshops on problems related to their field. Emphasis will be placed on new innovative and currently developed techniques for the field. A limit of six hours will be counted toward graduation in Master's degree program. Special approval needed from the department.

403A-2 Field Crop Diseases. A survey of major diseases of important field crops in the United States. Disease identification, cycles, and management strategies will be addressed. Special approval needed from the department.

403B-2 Horticultural Crop Diseases. A survey of major diseases of important horticultural crops in the United States. Disease identification, cycles, and management strategies will be addressed. Special approval needed from the department.

403C-1 Turfgrass Diseases. A survey of major diseases of important turfgrasses in the United States. Disease identification, cycles, and management strategies will be addressed. Special approval needed from the department.

403D-1 Tree Diseases. A survey of major diseases of important tree species in the United States. Disease identification, cycles

and management strategies will be addressed. Special approval needed from the department.

405-3 Plant Breeding. (Same as CSEM 405) Principles of plant breeding emphasized together with their application to the practical breeding of agronomic, horticultural and forest plants. Field trip costs approximately \$10. Special approval needed from the department.

408-3 World Crop Production Problems. Ecological and physiological factors influencing production in various areas of the world. Natural limitations on world crop production. Non-agricultural factors influence world crop output. Prerequisite: CSEM 200.

409-3 Crop Physiology. (Same as CSEM 409) Principles of basic plant physiology. Topics include cell structure, photosynthesis, respiration, water and mineral relations, vascular transport, and plant growth regulators. Course fee: \$50. Special approval needed from the department.

411-3 Human Resource Development Programs in Agriculture. (Same as AGSE 411) Principles and procedures of human resource development (HRD) programs in agriculture with emphasis on program determination and methods. Special approval needed from the department.

412-3 Methods of Agriculture Mechanization. (Same as AGSE 412) Theory and use of educational materials and devices adaptable to the needs and interests of educators involved in agricultural mechanization laboratories. There is a \$15 laboratory fee for this course.

414-3 Adult Education Procedures, Methods and Techniques. (Same as AGSE 414) Determining adult education needs and interests of the community. Securing and organizing the information needed for adult education programs and planning teaching activities.

415-3 Beginning Teacher Seminar. (Same as AGSE 415) The application in the professional field setting, of principles and philosophies of the education system. Includes application of principles of curricula construction, programming student and community needs. Special approval needed from the department.

418-3 Applications of Integrated Software/Agriculture. (Same as AGSE 418) Design of agricultural or educational applications of integrated software. Spreadsheet, database, word-processing, graphic and communications software will be applied to the solution of agricultural problems. Individual student projects will be the focus of the applied nature of the class. Prerequisite: AGSE 318. Restricted to: junior standing or consent of instructor.

419-3 Plant Molecular Biology. (Same as CSEM 419 and PLB 419) A survey of molecular phenomena unique to plant systems. Topics will include: genome organization and synteny between plant genomes, transcriptional and post-transcriptional control of gene expression, signal transduction, epigenetics, plant-pathogen interactions and responses to biotic and abiotic stresses. Special approval needed from the department.

420-4 Crop Pest Control. (Same as CSEM 420) Study of field pests of forest; orchard, field and garden crops; pest control principles and methods; control strategy; and consequences of pest control operations. Lab fee: \$35. Special approval needed from the department.

421-3 Turf Management Issues and Strategies. (Same as

HORT 421) Issues in environment, technology, management, society, politics, business, and sports that interact with turf management. Students will utilize periodicals and other references for preparing papers addressing these issues. Laboratory fee: \$25. Prerequisite: HORT 322 or permission of instructor.

422-3 Turfgrass Science and Professional Management.

(Same as HORT 422) Basic concepts of physiology, growth, and nutrition of turfgrasses and their culture. Application of turfgrass science to management of special areas, such as golf courses, athletic fields, sod farms, and to the turfgrass industry. Prerequisite: CSEM 240 and HORT 322 or equivalent. Special approval needed from the instructor. Lab fee: \$50.

423-3 Greenhouse Management. (Same as HORT 423)

Principles of greenhouse management controlling environmental factors influencing plant growth; greenhouses and related structures; and greenhouse heating and cooling systems. Laboratory fee: \$40. Prerequisite: HORT 220 or consent of instructor.

424-4 Floriculture. (Same as HORT 424)

Production, timing and marketing of the major floricultural crops grown in the commercial greenhouse. Each student will have an assigned project. Laboratory fee: \$40. Special approval needed from the department.

425-5 Environmental Physiology of Plants. (Same as CSEM

425; Same as PLB 425) The environmental physiology of plants focuses on the 1) influence of abiotic factors (e.g., light, water, temperature, nutrients, pollutants) on growth, development, and yield; 2) mechanisms by which plants respond to these abiotic factors; 3) use of biotechnology to increase abiotic stress tolerance in model and crop plants. Prerequisite: PLB 320 or CSEM 409. A \$35 laboratory fee will be assessed.

426-4 Genomic and Bioinformatics. (Same as CSEM 426)

The course is designed to introduce students from a variety of backgrounds and departments to the scope and methodology of genomic and bioinformatic sciences. Real problems and solutions from genome data analysis are studied in this course to see how high throughput genomics is driving bioinformatics, and changing the biological sciences in revolutionary ways. Special approval needed from the department.

427-5 Plant Biochemistry. (Same as PLB 427 and CSEM 427)

Exploration of fundamental biochemical pathways in plants with an emphasis upon carbon and nitrogen metabolism. Lab fee: \$35. Special approval needed from the department.

428-3 Advanced Landscape Design I. (Same as HORT 428)

Development of the design process, graphics and verbal communication of landscape projects. Emphasis on large-scale projects and residential design. Laboratory fee: \$25. Special approval needed from the department.

429-3 Advanced Landscape Design II. (Same as HORT 429)

Development of the design process, graphics and verbal communication of landscape projects. Emphasis on construction details, color rendering and portfolio development. Laboratory fee: \$25. Special approval needed from the department.

430-4 Plant Propagation. (Same as HORT 430)

Fundamental principles of asexual and sexual propagation of horticultural plants. Actual work with seeds, cuttings, grafts and other methods of propagation. Field trip costs approximately: \$5. Lab fee: \$40. Prerequisite: HORT 220.

431-4 Landscape Construction. (Same as HORT 431) An

introduction course in the basic elements of landscape construction dealing with wood, concrete, masonry and stone. Emphasis will be placed on safety, construction interpretation of construction drawings, specifications for specific structures, materials selection, cost estimation, site preparation, and construction techniques. Laboratory fee: \$170. Prerequisite: HORT 220.

432-4 Garden Center and Nursery Management. (Same as

HORT 432) Principles and practices in both field and container production or ornamental landscape materials and the marketing of landscape plant materials at the nursery and retail garden center. Business management of both nurseries and garden centers will be included. Laboratory fee: \$50. Special approval needed from the department.

433-3 to 7 Introduction to Agricultural Biotechnology. (Same

as AGSE 433, CSEM 433, HORT 433, PLB 433, PSAS 433)

This course will cover the basic principles of plant and animal biotechnology using current examples; gene mapping in breeding, transgenic approaches to improve crop plants and transgenic approaches to improve animals will be considered. Technology transfer from laboratory to marketplace will be considered. An understanding of gene mapping, cloning, transfer and expression will be derived.

434-3 Woody Plant Maintenance. (Same as HORT 434)

Care and management of ornamental shrubs and trees commonly used in the landscape. Topics to include trimming, pruning, fertilization, transplanting and diagnosis of woody plant problems. Special approval needed from the department.

435-1 to 4 Agricultural Molecular Biotechnology Seminar.

(Same as CSEM 435) Molecular Biology is rapidly making important contributions to agricultural science through biotechnology. An appreciation of the techniques of molecular biology and their application to plant improvement is important to all in agriculture and biology. The relationships between plant molecular biology and the biotechnology industry will be discussed. Presentations on particular research problems will be made. Graded S/U only.

436-4 Successful Fruit Growing. (Same as HORT 436)

Learn how to grow and use temperate fruit trees for your pleasure and/or economic benefit. Learn to use the basic principles of plant-environment interaction to understand and solve common problems found in the culture of tree fruit crops in the landscape, garden or orchard. Master the secrets of fruit growing through emphasis on hands-on experiential laboratories. Focus on Midwest culture of tree fruit and nut crops. One-day field trip. Required textbooks mandatory. Laboratory fee: \$135. Special approval needed from the department.

437-4 Vegetable Production. (Same as HORT 437)

Culture, harvesting, and marketing of vegetables; with morphological and physiological factors as they influence the crops. Laboratory fee: \$25. Special approval needed from the department.

438-3 Plant and Animal Molecular Genetics Laboratory.

(Same as AGSE 438, PLB 438, CSEM 438, AND ZOO 438)

Arabidopsis and Drosophila model organisms, lab-based training in laboratory safety, reagent preparation, phenotype analysis, genetics, DNA and RNA analysis, PCR, cDNA construction, cloning and sequencing of genes. Includes plant and bacterial transformation, and a population level analysis of genetic variation using RAPD markers in grasses and Alu

insertion in humans. Two 2-hr labs and one 1-hr lecture per week. Lab Fee: \$30. Prerequisites: BIOL 305 or equivalent or consent of instructor.

439-3 Introduction to Landscape Design Software. Introduces students to a popular software program used to create landscape designs. Emphasis is on learning the software program rather than learning the design process. Prerequisite: HORT 328A and HORT 328B.

441-3 Soil Morphology and Classification. (Same as CSEM 441) Development, characteristics, and identification of soils, study of profiles; and interpretation and utilization of soil survey information in land use planning. Field trip costing approximately \$5. Special approval needed from the department.

442-3 Soil Physics. (Same as CSEM 442) A study of the physical properties of soils with special emphasis on soil and water relationships, soil productivity and methods of physical analysis. Prerequisite: CSEM 240.

443-3 Soil Management. (Same as CSEM 443) The soil as a substrate for plant growth. Properties of the soil important in supplying the necessary mineral nutrients, water and oxygen and for providing an environment conducive to plant root system elaboration. Soil management techniques that are important in optimizing plant growth. Prerequisite: CSEM 240.

445-3 Irrigation Principles and Practices. (Same as CSEM 445) This course will cover basic principles of irrigation sciences; water requirements of crops; soil water relationship; water application methods including flooding, sprinkler and drip (or trickle) systems; water conveyance, distribution and measurement; evaluation of irrigation efficiency; and irrigation scheduling. Considerations will also include crop production effects and economic aspects of irrigation. Special approval needed from the department.

446-3 Soil and Water Conservation. (Same as CSEM 446) Covers the principles of hydrologic processes and soil erosion. Consideration will be given to the occurrence of soil erosion as it affects humans, food production and the environment. The methods and technologies for protecting against and controlling of erosion will also be discussed. Special approval needed from the department.

447-3 Fertilizers and Soil Fertility. (Same as CSEM 447) Recent trends in fertilizer use and the implications of soil fertility build up to sufficiency and/or toxicity levels; the behavior of fertilizer material in soils and factors important in ultimate plant uptake of the nutrients; the plant-essential elements in soils and ways of assessing their needs and additions; tailoring fertilizer for different uses and management systems; implication of excessive fertilization in our environment. Concurrent enrollment in PSAS 448 required. Special approval needed from the department.

448-2 Soil Fertility Evaluation. (Same as CSEM 448) A laboratory course designed to acquaint one with practical soil testing and plant analysis methods useful in evaluating soil fertility and plant needs. One hour lecture, two hours laboratory. Concurrent enrollment in PSAS 447 required. Special approval needed from the department. Laboratory fee: \$15.

454-4 Soil Microbiology. (Same as MICR 454) (Same as CSEM 454) A study of microbial numbers, characteristics and biochemical activities of soil microorganisms with emphasis on

the transformation of organic compounds, nitrogen phosphorus, sulfur, iron and other plant essential nutrients. Lab fee: \$15. Prerequisite: CSEM 240 or MICR 301.

455-3 Biology of Plant-Microbe Interactions. (Same as CSEM 455) The molecular basis of post-pathogen interactions and disease development in plants is examined with a critical review of original and current literature focusing on the mechanisms of pathogenesis, virulence, disease development and resistance, and response mechanisms in plants. Special approval needed from the department.

461-3 Programming for Agricultural Systems. (Same as AGSE 461) Computer programming concepts and strategies are applied to agricultural problems and systems. Students will analyze problems, design solutions, develop software and test solutions. Student will be expected to develop a software project related to their academic interests. Lab fee: \$10. Special approval needed from the department.

462-3 Sustainable Landscape Practices. (Same as HORT 462) Introduction to basic sustainable practices utilizing natural and ecological products and materials. Emphasis will be placed on safety, interpretation of design and construction drawings, site preparation, product and material selections and alternative choices, and sustainable landscape installations practices.

463-3 Agricultural Electrical and Electronics Systems. (Same as AGSE 463) Electrical and electronic knowledge and basic skills are developed and implemented with practical exercises and projects. Electrical and electronics circuits and control systems will be planned and constructed, with emphasis on automation, convenience, codes and safety.

466-4 Vine and Small Fruit Culture. (Same as HORT 466) Study of the developmental patterns and environmental responses of important vine and small fruit crops; strawberries, brambles, blueberries, grapes and exotic crops. Learn to adapt these crops to profitable culture for the amateur or professional with a Midwest focus. Practical hands-on experience in the classroom and the field. Two one-day field trips required. Required textbooks mandatory. Lab fee: \$150. Special approval needed from the department.

468-3 Weeds -Their Control. (Same as CSEM 468) Losses due to weeds, weed identification and distribution, methods of weed dissemination and reproduction, mechanical, biological and chemical control of weeds. State and Federal legislation pertaining to weed control herbicides. Herbicide commercialization. Field Trips costing approximately \$5. Special approval needed from the department.

469-3 Organic Gardening. (Same as HORT 469) This class will focus on the philosophical background of organic farming, as well as the biological, environmental and social factors involved in organic food production. The student will learn the basic principles of successful organic gardening without the need to use man-made synthetic chemical sprays and fertilizers. Topics covered will include soils and organic fertilizers, composting and mulches, companion planting and crop rotation, organic cultivation of fruit, vegetable and ornamental flowers/shrubs, organic pest and disease control, permaculture, and organic garden planning design and maintenance.

470-2 Post Harvest Handling of Horticultural Commodities. (Same as HORT 470) Fundamental principles of post harvest physiology, handling, and evaluation of horticultural commodities will be covered. Specific details will be given on vegetable, fruit,

ornamental and floricultural commodities. Field trip costing approximately \$30. Prerequisite: HORT 220 and PLB 320.

472-3 Precision Agriculture. (Same as AGSE 472) A study of the core components of Precision Agriculture including the Global Positioning System (GPS), multispectral and hyperspectral remote sensing technology, Geographic Information Systems (GIS), soil sampling, yield monitoring, and analysis & decision making systems applied for site specific management of production agriculture resources. Lab fee: \$5.

473-3 Agricultural Automation. (Same as AGSE 473) This course introduces students to topics such as power distribution, programmable controllers, sensors and components, ladder control circuits and diagrams, and motor controls. The lab will address automation issues for different industrial processes such as pasteurization. Lab fee: \$20. Prerequisite: AGSE 371 and 363 or consent of instructor.

475-4 Golf Course Green Installation and Maintenance. (Same as HORT 475) This course will mainly focus on the requirements, installation, care and maintenance of the rooting media of golf course putting green and turfgrass on disturbed soils. Prerequisite: CSEM 240.

476-3 Agricultural Safety and Health. (Same as AGSE 476) Analysis of safety and health issues important to managers and supervisors in agricultural operations. Topics include agricultural accident data, causes and effects of accidents, hazard identification, strategies for accident prevention, response to accidents and health risks and safeguards. Development and documentation of accident and illness prevention activities in the workplace. Special approval needed from the department.

480-3 Designing Outdoor Spaces. (Same as HORT 480) This course will instruct and challenge the student to design outdoor spaces that cultivate a sense of place as related to the site and the user. The course will review fundamental landscape planning process including principles and elements of design with an emphasis on "green" decision making. Special approval needed from the department.

483-3 Agricultural Processing Systems. (Same as AGSE 483) This course provides students with an understanding of the design principles, equipment, procedures and processes utilized in handling processing and storing agricultural products. Prerequisite: AGSE 371.

488-3 Food Engineering Technology. (Same as AGSE 488) This course introduces the basic principles of facilities planning for larger operations and complexes of the food processing industry, and to gain management/technology insight in food engineering technology. Special approval needed from the instructor.

489-3 Brewing & Distilling Technology. (Same as AGSE 489) The primary focus on this course is to introduce the basic facilities planning for the operation of the brewing and distilling industry, and to gain management and technology insight in brewing/distilling production. Restricted to Junior/Senior standing in Ag Systems Technology or AGSE 375, basic email computer skills. Special approval needed from the instructor.

495-3 Food & Pharmaceutical Packaging. (Same as AGSE 495) Applied packaging and food engineering principles used in packaging, storing, preserving, and transporting food and drug products. Topics include packaging functions, graphic design, printing, sterilization, and food safety. Utilization of paper, glass plastics, laminates and metals. Applications of machinery and

equipment. Prerequisite: AGSE 371.

497-3 Agricultural Operations Management. (Same as AGSE 497) A capstone course in product support, interpretation of financial reports, preparing and monitoring budgets, time and process management, critical thinking, advanced problem solving. Prerequisites: AGSE 318, 371, 375.

499-3 Agriculture Information for K-12th Grade Teachers. (Same as AGSE 499) A general inquiry into the agriculture literacy appropriate for elementary students. A framework for evaluating content appropriate for elementary students in the pursuit of agriculture literacy will be developed.

500-3 Agricultural Systems Research Methodology. Research methodology for agricultural education and agricultural systems technology including defining research problems, preparing project proposals and sources of data. Special approval needed from the department.

501-3 Recent Research in Agricultural Education. A study of recent research and development in agricultural education. The course includes an analysis of regional and national scholarly publications, procedures and products. Special approval needed from the department.

518-3 Principles of Herbicide Action. Chemistry and mode of action of herbicides. Nature of herbicidal action. Illustrates the various types of chemical weed control procedures in current use. The physiology of herbicidal action examined using the different mechanisms established for various chemical groups of herbicides. Prerequisite: PSAS 468, PLB 320.

520-3 Growth and Development of Plants. (Same as PLB 520) Physiological control of developmental processes. Emphasis on exogenous growth-regulating compounds and their behavior in plants. Special approval needed from the department.

524-3 Gene Regulatory Networks. (Same as PLB 524) An examination of the integration of genes into developmental, abiotic stress response, metabolic and light gene regulatory networks. Includes motif discovery, cis-regulatory elements, discussion of transcription factor families, RNA interference, network theory, feedback loops, cytoplasmic inheritance, maternal effect, post-transcriptional and post-translational regulation. Prerequisites: BIOL 305 or PLB 471.

525-3 Program Development in Agricultural Education. Analysis and appraisal of current trends in agricultural education program development. Attention is given to implications for educators at the high school, post secondary and in extension education positions. Offered each year, alternating spring and summer semesters.

526-4 Cytogenetics. Special approval needed from the department.

527-3 Professional Development in Agricultural Education. Recent developments and trends in agricultural education are presented for review and discussion. The role of the agricultural instructor in determining educational priorities is emphasized. Offered each year, alternating fall and summer semesters.

530-3 Plant Ecophysiology. (Same as PLB 530) A study of the physiological processes that influence the growth reproduction, adaptation, and geographic distribution of plants. The ecophysiology of plant stress and interactions. Special approval needed from the department.

531-3 International Agricultural Systems. (Same as AGSE 431) Introduction to world agriculture, farming systems, world

crops, agricultural trade, and food production and processing. Influence of population and climate. Ethical issues surrounding rain forests, global agriculture, finance, world trade, crops and livestock, and the environment. Appropriate technologies and their social and economic impact on developing countries. Special approval needed from the department.

547-2 Soil and Environmental Quality. A study of the interaction between plants and soil-water, and their effects on soil and water pollution. Reactions and processes governing the solubility and mobility of metals, organic compounds and nutrients in soil, sustainable management practices, and soil/water resource remediation improving environmental quality will be discussed. Prerequisite: CSEM 240 or consent of instructor.

548-2 Fundamentals in Urban Soils. Study of the function, structure, and management of soils and engineered soils in the urban environment. Emphasis is on urban horticulture, turf, and urban forests, landscape plants and urban settings. Course will focus on understanding and implementation of basic soil concepts, with an emphasis on sustainability and management of urban soils to minimize maintenance and maximize utility.

550-3 Plant Disease Management and Epidemiology. This course will provide understanding of approaches to managing plant diseases, strategies for developing and implementing integrated disease management programs, and methods for monitoring and analyzing epidemics. Special approval needed from the department.

551-4 Plant Nematology. This course will provide an understanding of plant parasitic nematode anatomy and morphology, identification, life cycles, and management strategies. Emphasis will be placed on practical or applied aspects of information presented. Special approval needed from the department.

555-4 Nanotechnology for Agricultural and Food Industries. This course will cover fundamentals and applications of nanotechnology applied to the agri-food sector. Novel techniques such as encapsulation and delivery of agricultural and food molecules, diagnostics and sensing for plant and animal health will be covered. Application in production, processing and packaging of food and feed, to improve safety, quality and security will also be covered by student participation and guest lecturers. Prerequisite: CHEM 140A&B, PHYS 203A&B or consent of instructor.

560-5 (3,2) Field Plot Technique. (a) Design of field plot and greenhouse experiments including appropriate statistical analyses for each of the designs. Data interpretation. Prerequisite: COUN 506, or ZOOL 557, or consent of instructor. **(b)** Each of the designs discussed in (a) will be illustrated with a type problem and solved by computer processes using primarily MINITAB and SAS software programs. Prerequisite: PSAS 560A, or concurrent enrollment or consent of instructor.

563-3 Plants for the Ecological Landscape. (Same as HORT 463) Introduction to alternative plant selections for the urban landscape associated with use of native plants and creating edible landscapes. Emphasis is placed on site location, whether on the ground, in containers or on a green roof, to determine best practices and appropriate choices in urban environments.

564-3 Growing Fruit in the Urban Environment. Learn why and how to grow perennial fruit crops in limited and special spaces in the urban environment. The potential uses of temperature

perennial fruit plants in the urban landscape are examined. Theoretical obstacles to successful fruit growing are explored. The unique advantages and disadvantages of growing long-lived perennial plants in the urban landscape are examined. Methods of developing practical crop scheduling for intended outcomes (low vs. high inputs) are talked about. Efficient utilization of urban meso-climate niches are covered.

565-1 Bee Management in Urban Spaces. Study of the role of bees in the urban landscape. Behavior, biology and pests of bees will be examined. Practical management of bees will be explained in connection with maintaining healthy bee ecosystems. The demonstrator species will be the honey bee *Apis mellifera*.

571-4 Genomics of Eukaryotes: Bioinformatics. (Same as PLB 571) Genomics, Proteomics and Bioinformatics are rapidly making important contributions to the Life Science through biotechnology. An appreciation of the genomic tools is important to all in agriculture and biology. The relationships between molecular biology bioinformatics and the biotechnology industry will be explored. Short independent practical projects in genomics, proteomics or bioinformatics will be pursued.

572-3 Current Research in Agricultural Systems. A study and analysis of current problems, research findings and innovations in agricultural systems. Technical reports and journal articles will be discussed and analyzed. Students will select articles related to their own research interests and begin writing a thesis or research proposal. Special approval needed from the department.

575-3 Introduction to Agricultural Systems. Operational functions and processes that are integrated to accomplish a designated, well-defined purpose in production and processing. Topics include planning and evaluating reliability, manpower, scheduling, economy, packaging, human and animal factors. Prerequisite: AGSE 318, 371, or instructor approval. Laboratory fee \$10.

580A,B,C-3 (3,3,3) Colloquium in Bioinformatics for Computer Engineers. Bioinformatics makes important contributions to the Life Sciences through biotechnology. The use of Bioinformatics is important to all in agriculture, biology, computer engineering and computer science involved in the analysis of genes; proteins; and genomes by computers and networks. Short independent practical projects in bioinformatics or computer networking may be pursued. Graduate Student status required. Sections A, B, and C. May be taken online.

581-1 to 4 (1,1,1,1) Seminar. Individual presentations on subjects and problems relating to soils, field and horticultural crops, education, information, and technologies and other phases of plant, soil and general agriculture. Graded S/U only.

582-6 (2,2,2) Colloquium in Plant and Soil Science. Recent developments and trends in specialized areas of plant and soil science will be discussed in **(a)** Genetics and plant breeding, **(b)** Research methods, **(c)** Physiology and ecology.

583-3 Urban Ecological Landscape Practicum. Critical analysis and innovative design/solutions of urban landscape practices and urban agriculture from an ecological perspective. This practicum culminates the objective of integrating natural systems in the design and practice of sustainable landscape systems including urban food production. Learning opportunities will be presented through site visits and case studies. Students will demonstrate practical application of

theories and systems through discussions and presentations.

588-1 to 8 International Graduate Studies. Residential graduate study programs abroad. Approval of department required both for the nature of program and number of hours of credit. Special approval needed from the department. Graded *S/U* only.

590-1 to 4 Readings. Contemporary books and periodicals on selected subjects within the fields of plant, soil and agricultural systems. Special approval needed from the department.

592-1 to 3 Special Problems. Directed study of specialized areas of crop production, horticulture, soils or agricultural systems depending on the program of the student. Discussion, seminars, readings and instruction in research techniques. Special approval needed from the department.

593-1 to 6 Individual Research. Directed research on approved projects investigating selected fields of plant, soil and agricultural systems. Special approval needed from the department.

595-1 to 4 Agricultural Occupation Internship. Prepares coordinators to fulfill their responsibilities in selected areas in agricultural related occupations through an internship in the area of specialization and through orientation to related technical information. Special approval needed from the department.

599-1 to 6 Thesis. At least three hours of thesis credit is required for the Master's degree under the thesis option. Special approval needed from the department.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Political Science

<http://politicalscience.siu.edu>
 polsgrad@siu.edu

COLLEGE OF LIBERAL ARTS

Graduate Faculty:

Baker, John H., Associate Professor, *Emeritus*, Ph.D., Princeton University, 1961; 1966.

Bloom, Stephen, Associate Professor, Ph.D., University of California, LA, 2004.

Bricker, Benjamin, Assistant Professor, Emeritus, Ph.D., University of Delhi, 1969.

Burnside, Randolph, Associate Professor, Ph.D., University of New Orleans, 2004; 2005.

Clinton, Robert L., Professor, *Emeritus*, Ph.D., University of Texas, 1985; 1985.

Comparato, Scott A., Associate Professor, Ph.D., Washington University, 2000; 2000.

Dale, Richard, Associate Professor, *Emeritus*, Ph.D., Princeton University, 1962; 1966.

Davis, Randall S., Assistant Professor, Ph.D., University of Kansas, 2011; 2013.

Desai, Uday, Professor, *Emeritus*, Ph.D., University of Pittsburgh, 1973; 1978.

Foster, John L., Associate Professor, *Emeritus*, Ph.D., University of Minnesota, 1971; 1975.

Garner, William R., Associate Professor, *Emeritus*, Ph.D., Tulane University, 1963; 1966.

Grant, J. Tobin, Professor, Ph.D., The Ohio State University, 2001; 2001.

Hamman, John, Associate Professor, Ph.D., University of Illinois, 1988; 1989.

Jackson, John S., III, Professor, *Emeritus*, Ph.D., Vanderbilt University, 1971; 1969.

Kamarasy, Egon K., Assistant Professor, *Emeritus*, Doctor Politics, Budapest University, Hungary, 1942; 1959.

Mason, Ronald M., Associate Professor, *Emeritus*, Ph.D., University of Iowa, 1976; 1976.

McClurg, Scott D., Professor, Ph.D., Washington University, 2000; 2001.

Melone, Albert, Professor, *Emeritus*, Ph.D., University of Iowa, 1972; 1979.

Miller, Roy E., Associate Professor, *Emeritus*, Ph.D., University of Illinois, 1971; 1967.

Mulligan, Kenneth, Associate Professor, Ph.D., Ohio State University, 2004; 2006.

Pink-Harper, Stephanie A., Assistant Professor, Ph.D., Mississippi State University, 2011; 2011.

Shulman, Stephen, Associate Professor, Ph.D., University of Michigan, 1996; 1997.

Snively, Keith, Professor, *Emeritus*, Ph.D., University of California at Davis, 1984; 1984.

Somit, Albert, Distinguished Service Professor, *Emeritus*, Ph.D., University of Chicago, 1947; 1980.

Stewart, LaShonda M., Associate Professor, Ph.D., Mississippi State University, 2008; 2008.

Tilley, Virginia Q., Professor, Ph.D., University of Wisconsin,

1997; 2014.

Turley, William S., Professor, *Emeritus*, Ph.D., University of Washington, 1972.

The Department of Political Science offers graduate work leading to M.A., M.P.A. and Ph.D. degrees. The department endeavors to accommodate the special and general interests of students through a broad curriculum, individualized programs, and varied teaching and research assistantships. The department takes a personal interest in its students throughout their period of enrollment and assists them in finding satisfying professional employment upon graduation. Graduates now hold academic appointments in 60 American universities and colleges and more than a dozen foreign institutions of higher education. Graduates are also employed in various governmental agencies at the national, state, and local level. The professional interests of the faculty range across most fields of political science, and have resulted in significant scholarly publications and presentations at professional meetings.

Provisions of this publication are supplemented by policies made explicit in the regulations and procedures of the graduate studies program of the Department of Political Science and made available to all graduate students.

Application Procedures

The Department of Political and Graduate School applications form one combined application that should be submitted electronically through the ApplyYourself system. The link to ApplyYourself is available at the Graduate School website. There is a supplemental application (Part Two), specific to the Department of Political Science that must be submitted along with the main online application. Separate forms are not required for application for financial assistance, except for Graduate School fellowships. Students will be accepted for graduate work in political science only upon approval by the department as well as the Graduate School. This program requires a nonrefundable \$65.00 application fee; applicants must pay this fee by credit card through ApplyYourself.

All applicants must submit all post-secondary education transcripts, three letters of recommendation from persons who can evaluate the applicant's academic ability and a statement of purpose. Applicants for the M.A. and Ph.D. programs must also submit scores on the Graduate Record Examination (GRE) verbal and quantitative tests and an example of written work that demonstrates the applicant's analytical and writing skills. Foreign students must have taken the test of English as a foreign language (TOEFL) and are expected to have a score of at least 600 (paper score) or 250 (computer score).

Applications and supporting materials for the M.A. and Ph.D. program that are submitted by January 15 will be given full consideration for admission and funding. Exceptional applications, however, will be considered until March 15. Applicants should contact the M.P.A. program office for the deadlines pertaining to the application term.

Master of Arts Degree Requirements

Admission. Applicants for the Master of Arts degree program are admitted only with the approval of the graduate studies committee of the department. The department imposes

requirements for admission in addition to those of the Graduate School. The department will ordinarily accept as candidates for the Master of Arts degree only those applicants who (1) have graduated from an accredited four year college or university; (2) have completed four or more courses in social science, humanities, or related disciplines; (3) have a 2.7 (4-point scale) overall grade point average or, alternatively, have a 2.9 overall grade point average for the last two years of undergraduate work; and (4) have a 3.0 average in government or political science.

Retention. Retention is governed by the rules of the Graduate School. Students should avoid the accumulation of incomplete grades. No student with more than two incomplete grades can be awarded a graduate assistant appointment, and a student holding a graduate assistant appointment is subject to having the appointment terminated upon acquiring two or more incomplete grades.

Course Work. The Director of Graduate Studies serves as advisor to each M.A. student until an advisory committee has been selected by the student with the approval of the director, normally no later than the middle of the student's first semester in residence. The advisory committee must approve the student's program. The student must earn a minimum of 30 semester hours of acceptable graduate credit to qualify for the Master of Arts degree. A maximum of 9 hours can be earned in 400-level courses. The student who completes the minimum of 30 semester hours of course work may devote no more than nine of those hours to courses taken outside of the department. Each candidate for the Master of Arts degree must complete 6 hours for research tools and methods requirements (POLS 500A and POLS 500B), a 1 hour pre-professional requirement (POLS 593) and 6 hours for two proseminars.

Research Paper: A Master of Arts degree will be awarded upon completion of a research paper and the course and hour requirements. The research paper is developed from a paper produced in a seminar or through independent readings/research with a faculty member. Students will select an advisor for the Master's Research Paper (e.g., the person who taught the course or supervised the readings/research project). Students will enroll with this faculty member for 3 semester hours in POLS 591, Individual Research, for the completion of the research paper. This course can be taken concurrently with or after the research seminar. The selection of the advisor requires paperwork that must be filed with the Director of Graduate Studies. The research paper will then be submitted for evaluation to another faculty member selected in concurrence with the faculty advisor for the paper. In case of disagreement over the evaluation (pass/fail) of the paper, the graduate studies committee will appoint a third reader. The master's research paper normally is 30 to 80 pages in length. In addition to the copy required by the Graduate School, one suitably bound copy must be deposited in the department library.

Exceptions. An exception from these rules must be justified in a petition approved and signed by the student's committee members, submitted to the Director of Graduate Studies and approved by the members of the graduate studies committee at a scheduled meeting.

Master of Public Administration Degree Requirements

mpaprog@siu.edu

Admission. Students applying to the M.P.A. Program are admitted as either pre-service or in-service. To be admitted as an in-service, the student must have significant professional experience in a public or quasi-public agency. This can generally be defined as at least one year of full-time administrative work experience. Students having less than one year of professional experience are admitted as pre-service.

To be considered for admission, applicants must have: (1) graduated from an accredited four-year college or university and (2) received an overall grade point average of 3.0 on a 4.0 scale, or a 3.0 overall grade point average for the last two years of undergraduate work. In instances where a candidate's promise is indicated by professional experience rather than undergraduate record, consideration for admission will be given on an individual basis. Admission exceptions may be granted by the director upon careful review of the student's entire application including: letters of recommendation, a personal statement, and a writing sample. All international MPA applicants, except those from English-only speaking countries, must submit either an Internet-based TOEFL or IELTS official score report. If you obtained (or are obtaining) an undergraduate or a graduate degree in an English-only speaking country, your TOEFL/IELTS score requirement will not be waived. The MPA program requires a minimum TOEFL score of 550 overall or minimum IELTS score of 6.5. The program requires a nonrefundable \$50.00 application fee that must be submitted with the Application for Admission to Graduate Study in Public Administration. A GRE score is required of all applicants wishing to be considered for a graduate assistantship or fellowship.

Degree Requirements. M.P.A. students complete a 40 semester hour program of study as follows: (1) nine required courses totaling 25 semester hours, (2) 12 semester hours of elective course work, (3) an internship for three semester hours, and (4) successfully passing a comprehensive final examination. Of the 40 hours of graduate level coursework, at least 19 semester hours must be taken in the Department of Political Science. Each of these requirements is described below. In-service students are not required to complete an internship, reducing the total number of semester hours needed to graduate to 37.

Retention. All M.P.A. students are required to maintain a minimum level of academic performance. Any student earning a C grade or below in two or more M.P.A. required courses will be dismissed from the program. Students must otherwise conform to the standards set out in the M.P.A. Student Handbook. Issues not addressed by the Handbook fall under retention policy provisions in Graduate School Catalog.

Prerequisites. Students lacking undergraduate preparation in public administration must complete POLS 537 (Foundations of Public Administration) during their first semester of study. Exceptions to this may be granted to in-service students, on a case-by-case basis. Additionally, POLS 503 is a prerequisite

to enrollment in POLS 539 and is recommended prior to enrollment in POLS 542. POLS 540 can only be taken after at least three other core courses have been successfully completed.

Core Requirements - 25 credit hours

POLS 503-3	Research Methods for Public Administrators
POLS 535-3	Ethical Foundations of Public Service
POLS 539-3	Program Analysis and Evaluation
POLS 540-3	Seminar in Public Management
POLS 542-3	Public Budgeting and Fiscal Management
POLS 543-3	Human Resource Management
POLS 545-3	Organization Theory and Behavior
POLS 546-3	Leadership in Public Administration
POLS 594-1	Preprofessional Seminar in Public Administration

Internship Requirement - 3 credit hours

POLS 595-3	Internship in Public Affairs
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Elective Requirements - 12 credit hours

Elective courses are selected by the student and the Field Representative.

To facilitate the work of employed students, each of the required courses is offered in the evening at least once every three years. A substitution for one core course may be allowed if the substituted course is similar in content to the particular core course, or if competence in the subject matter of the course is clearly evident. All substitutions must be approved by the director of the program. M.P.A. students concentrating in aviation administration will substitute POLS 557 (Public Financial Administration) for POLS 539 (Program Analysis and Evaluation).

Electives. Electives courses may be selected from the offerings of various departments across the University, as well as those in the Department of Political Science. The student and the Field Representative consult in selecting courses best suited to the student's individual career goals. 400 level courses, of an introductory technical nature and other specialized courses especially relevant to the public administration profession, may be taken with the consent of the director of the program. Students may count no more than six hours of 400 level credits toward fulfillment of the degree.

MPA Comprehensive Exam Policy. All Masters of Public Administration (MPA) students must successfully complete a comprehensive examination as a part of their degree requirements. The examination will be taken in the semester in which the student completes all coursework (with the possible exception of one substantive course) for the program. The examination will consist of questions from the core courses in the program. A follow-up oral examination may be required at the discretion of the MPA faculty. In order to pass the exam, students must score at least an 80 out of 100 possible points. If a student fails the examination, they may retake the comprehensive examination one time during the next regularly scheduled examination period.

Internship. Pre-service students must register for POLS 595

and serve an internship in a governmental agency, nonprofit organization or quasi-governmental agency. The internship requires a minimum of 300 hours of work and must be approved by the director of the program. In extraordinary circumstances, a pre-service student may substitute three semester hours of coursework for the internship if a request is approved by the director.

MPA Aviation Administration Concentration

To be considered for admission into the aviation concentration, pre-service applicants will have graduated from an accredited four year college or university with a major in some aspect of aviation, with a minimum grade point average of 3.0. In-service applicants with strong professional experience may be admitted with undergraduate grade point averages below 3.0, and with undergraduate majors outside of the aviation field. Prerequisite coursework including POLS 537 and additional aviation administration courses may be required in these situations.

Core Requirements - 25 credit hours

POLS 503-3	Research Methods for Public Administrators
POLS 535-3	Ethical Foundations of Public Service
POLS 540-3	Seminar in Public Management
POLS 542-3	Public Budgeting and Fiscal Management
POLS 543-3	Human Resource Management
POLS 545-3	Organization Theory and Behavior
POLS 546-3	Leadership in Public Administration
POLS 557-3	Public Financial Administration
POLS 594-1	Preprofessional Seminar in Public Administration

Aviation Requirements - 12 credit hours

(Select four of the five aviation courses)

POLS 551-3	Aviation Policy, Law and Regulation
POLS 552-3	Advanced Airport Administration
POLS 553-3	Advanced Aviation Safety Administration
POLS 554-3	Aviation Planning
POLS 555-3	International Aviation

Internship Requirement - 3 credit hours

POLS 595-3	Internship in Public Affairs
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Concurrent Degrees in Law and Public Administration

Students who have been admitted separately to the Southern Illinois University School of Law and the Master of Public Administration program may study concurrently for the Juris Doctorate and M.P.A. degrees. Students interested in concurrent study should inform both programs before entering the second academic year as law students. Students will not be permitted to take course work outside the prescribed law curriculum during the first year of law school. The required courses for joint degree students are as follows:

Core Requirements - 22 credit hours

POLS 503-3	Research Methods for Public Administrators
POLS 539-3	Program Analysis and Evaluation
POLS 540-3	Seminar in Public Management
POLS 542-3	Public Budgeting and Fiscal Management
POLS 543-3	Human Resource Management

POLS 545-3 Organization Theory and Behavior
 POLS 546-3 Leadership in Public Administration
 POLS 594-1 Preprofessional Seminar in Public Administration

Law Requirements - 15 credit hours

(Select five law courses from the list below)

LAW 533, 539, 548, 552, 553, 558, 568, 579, 585, 589, 593, 596, 600, 619, 620, 622, 642, 650, 651, 662, and 668

Internship Requirement - 3 credit hours

POLS 595-3 Internship in Public Affairs

Additionally, students without any background in public administration may be required to enroll in POLS 537 as a prerequisite to the program. Students with prior public sector administrative experience may petition to waive the internship requirement in their first semester in the program.

Ph.D./J.D. in Political Science and Law

Students who have been admitted separately to the Southern Illinois University School of Law and doctoral program in political science may study concurrently for the Juris Doctor and Doctor of Philosophy degrees. Students interested in concurrent study should inform both programs before entering the fourth semester of law school. Each program will maintain records and evaluate final degree requirements as if the student were enrolled in only one program.

Concurrent study students must complete a minimum of 81 semester hours of School of Law credits which meet all law area requirements, as well as all Ph.D. area requirements, to receive the J.D. degree. Students will not be permitted to take course work outside the prescribed law curriculum during the first year of law class work. Students may enroll for both law and graduate course work during subsequent years provided a minimum of 10 semester hours of law and 12 semester hours total are taken in any term which has law course enrollment.

Concurrent study students must complete the entire first-year law curriculum with a law grade point average of 2.5 before being eligible to register for any political science graduate courses; and must complete a minimum of 60 semester hours which meet the distribution requirements of the Ph.D. program, as well as all law area requirements, to receive the Ph.D. degree. A maximum of 9 semester hours of School of Law credits of a political science nature (for example administrative law, environmental law, labor law, natural resources law) may be applied to both J.D. and Ph.D. requirements if approved by the director of the Ph.D. program. All concurrent study students will complete a doctoral dissertation.

Doctor of Philosophy Degree Requirements

Admission. Applicants for the doctoral degree are admitted only with the approval of the Graduate Studies Committee of the department. Students are expected to have sufficient background in political science. Students without a Master's degree will be admitted to the department's Master program, and upon completion will be admitted to the doctoral program in accordance with the established rules of the department and Graduate School.

Retention. Retention is governed by the rules of the Graduate

School. Students are expected to make reasonable progress toward a degree. Failure to make progress toward the degree will result in a student's removal from the Ph.D. program.

Accelerated Entry into the Ph.D. Degree Program. An option is available, at the discretion of the department faculty, to allow exceptional M.A. students to enter the doctoral program at the end of their first year of M.A. study. For these students, the following are sufficient for the M.A. degree in Political Science:

1. Completion of 30 hours of coursework, including 21 hours at the 500 level (which can include up to 9 credit hours of POLS 591 "Individual Research"); and
2. A research paper (normally one prepared for class, approved by the student's advisor and the Director of Graduate Studies and submitted to the Graduate School.)

No additional stipulations on the nature of coursework are imposed.

Direct Entry into the Ph.D. Degree Program. Students with an MA degree may apply to be admitted directly into the Ph.D. program. They are required to fulfill all degree research tools and methods, pre-professional, and course work requirements as part of the Ph.D. degree work. Additional measures of progress may be required by the student's advisory committee.

Program of Study. The work of a Ph.D. student is directed toward admission to candidacy for the doctorate, for which the student must meet the residency requirement, must take 6 hours of research tools and methods course requirements, 2 hours of pre-professional course requirements, take a minimum of 27 hours of coursework in addition to research tools and pre-professional course requirements, maintain a GPA of at least 3.5, and pass preliminary (written and oral) examinations. Students must pass written preliminary examination in two fields. The possible fields are: methodology; American government and politics; public law; public administration and policy analysis; international relations; and comparative politics.

The student must be in residence for at least 1 year (2 semesters) in each of which the student completes at least nine hours (or six hours if the student holds a graduate assistantship) after admission to the Ph.D. program before preliminary examinations can be taken.

The student's coursework must be approved by the student's advisory committee and the Graduate Studies Committee. The advisory committee is selected by the student. The advisory committee is composed of a chair, who is qualified to chair a dissertation in the department, and two other members of the department faculty. The members of the advisory committee must represent the student's research and dissertation interests. The student's coursework is expected to be approved during the student's second semester in the program. The Director of Graduate Studies will determine the deadline and procedures for approval of a student's coursework.

The student must complete all course requirements determined by the student's advisory committee. This may include requirements such as pro-seminars, additional methods courses, or language study. A student must take at least two pro-seminars. Not more than nine hours of readings or individual research (POLS 590, 591, 592A-E) may be counted toward the

student's program of study. Before enrolling in POLS 592A-E or POLS 591, the student is expected to have completed the appropriate pro-seminar for the area in which readings or individual research is to be done.

Not more than three 400-level courses may be included as part of the student's program of study. Not more than nine hours of coursework outside of the department may count toward the minimum requirement.

Research Tools and Methods. Both Ph.D. and M.A. students must acquire knowledge of research tools and methods. POLS 500A and POLS 500B constitute the department's required methodology sequence. A student's Advisory Committee may require additional coursework in methods and/or tools (e.g. statistics or a foreign language) as appropriate to the student's substantive coursework thesis, and dissertation. Additional methods courses may include qualitative methods (POLS 501) or advanced statistical methods (POLS 502) or offerings in other departments. Ph.D. students who wish to take methods as a field must complete at least two additional methods courses in consultation with their advisory committees and approved by the Graduate Studies Committee.

Pre-professional Requirements: Students must complete two pre-professional courses, POLS 593 and POLS 598.

Preliminary Examinations. Before preliminary examinations can be scheduled a student must have completed all course work, have a grade point average of at least 3.5, and have had a preliminary examination committee approved by the Director of Graduate Studies. Students may not take preliminary examinations if there are any incomplete grades on their records except by petition to the Graduate Studies Committee.

The written preliminary examinations are to be completed within a period of ten days or two periods of ten days each in successive semesters; an oral examination follows within two weeks of the last written examination upon the approval of the examination committee. Students will submit either a research paper or a draft of a prospectus to committee members 10 days prior to the oral examination. A student who passes the written and oral examinations is advanced to candidacy for the Ph.D. degree; a student who does not pass the examinations may be permitted to retake them at a later date or be dropped from the degree program of the department, at the discretion of the advisory committee and the Graduate Studies Committee.

Dissertation. A dissertation must be written under the direction of and with the approval of a five member committee, one of whom must be from outside the Department of Political Science. The membership of the dissertation committee will normally be different from that of the advisory committee. A dissertation prospectus must be approved by the members of the dissertation committee and filed with the Director of Graduate Studies. Students must register for a minimum of 24 hours of dissertation credit POLS 600, and cannot register for dissertation credit until they have been admitted to candidacy or, with the approval of the advisory committee and the Director of Graduate Studies, until the term during which preliminary examinations are scheduled.

An acceptable dissertation must be completed within five

years after admission to candidacy, or the student will have to repeat preliminary examinations. Final copies of the dissertation should be submitted to the members of the dissertation committee no later than ten days before the scheduled oral examination. The success of a final oral examination devoted primarily to a defense of the dissertation and open to the public will complete the requirements for the Doctor of Philosophy degree. A final copy of the dissertation must be filed with the Director of Graduate Studies.

Application of Rules and Exceptions. The department's rules in force at the time of the student's admission to the Ph.D. program will apply while the student is in the program unless (1) the student voluntarily selects a newer set of rules before graduation or (2) the time between admission to the Ph.D. program and passing the preliminary examinations exceeds five years. In the latter case, the student will automatically come under the rules in force at the beginning of the sixth year and every fifth year thereafter until the preliminary examinations are passed.

Requests for exceptions to any of the above requirements must be presented in a petition approved and signed by the members of the student's committee, submitted to the Director of Graduate Studies, and approved at a scheduled meeting of the Graduate Studies Committee.

Cooperative Program with University of Illinois at Springfield

The Department of Political Science at SIU has an agreement with the political studies program at University of Illinois at Springfield (UIS) to facilitate the entry of UIS political studies students into the SIU political science Ph.D. degree program. SIU will accept appropriate UIS graduate credits to fulfill course work, methodology, and research tool requirements. UIS students can qualify for accelerated entry into the SIU doctoral program after two semesters of study at UIS with 24 semester hours completed, a 3.5 GPA, two proseminars, and written evaluations from course instructors. A number of UIS faculty are eligible to serve on graduate student examination and dissertation committees. SIU will accept up to 12 hours credit for course work, research projects, and internships completed under UIS faculty direction towards the SIU political science Ph.D. degree. Other course work, residency, and dissertation requirements of the SIU program must be met as described in other sections of this catalog. For more detailed information, ask the director of graduate studies, Department of Political Science, SIU.

Courses (POLS)

For more The Department of Political Science offers courses toward the Master of Arts degree and Ph.D. degree in political science and the Master of Public Administration.

403-3 Philosophy of Politics. (See PHIL 441.)

405-3 Democratic Theory. (Same as PHIL 405) An examination of various aspects of democratic thought, including the liberal tradition and its impact upon the United States. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement. Prerequisite: POLS 114.

406-3 American Political Thought. This course is an advanced

seminar in American political thought. The course focuses on the founding ideals and practices of the American republic and how these ideals functioned in subsequent social movements, political struggles, and ideological conflicts in American political history. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement.

408-3 Formal Political Theory. This course is an introductory survey of formal modeling techniques that have been important in Political Science during the latter half of the 20th Century. Included in this survey are such topics and approaches as Game Theory, Social and Public Choice Theory, Voting Theory, Spatial Modeling, Prisoners' Dilemma, Impossibility Theorems, Vote Trading and Public Goods.

413-3 Federalism. An examination of relationships among national, state, and local governments in the American federal system, with emphasis on recent literature and contemporary issues. Special attention is given to fiscal relations, interbranch cooperation and specific intergovernmental programs. Prerequisite: POLS 114 with a grade of C or better.

414-3 Political Systems of the American States. The state level of government viewed with emphasis upon recent developments and current research. Prerequisite: 213.

415-3 Urban Politics. An examination of the environment, institutions, processes and functions of government in an urban society with particular emphasis on current problems of social control and the provision of services in the cities of the U.S.

418-3 Political Communication. (See CMST 451) A critical review of theory and research, which relate to the influence of communication variables on political values, attitudes, and behavior.

419-3 Political Sociology. (Same as SOC 475) An examination of the social bases of power and politics, including attention to global and societal political relations, as well as individual-level political beliefs and commitments; primary focus on American politics.

420-3 Interest Group Politics. The role interest groups in American democracy, including the political influence of contemporary interest groups, such as labor, racial and women's organizations. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement. Prerequisite: POLS 114 with a minimum grade of C.

435-3 Judicial Process and Behavior. An examination of the process by which judges in both trial and appellate courts at federal and state levels are selected and of the ways in which they make decisions. Attention to the structure of the courts. Study of the communication and impact of judicial decisions. The course will provide some insight into the methods used to study judicial behavior. Fulfills the CoLA Writing-the-Curriculum (WAC) requirement. POLS 114 and 230 recommended prerequisites.

436-3 Administrative Law. The procedural law of public agencies, particularly the regulatory commissions but also executive branch agencies exercising regulatory functions. The exercise of discretion and its control through internal mechanisms and judicial review. POLS 114 and 230 recommended prerequisites.

437-3 Jurisprudence (Theories of Law). This course provides an examination of the major schools in legal thinking. We will investigate classic jurisprudential questions, including: theories of how judges decide cases, the role of morality and natural rights in determinations of law, and the role of legislative and

judicial actors in the creation of law. POLS 114 and 230 are recommended.

438-3 Women and the Law. (Same as WGSS 438) This course is an advanced seminar in public law with a focus on gender, law and society. The course will engage with issues in feminist legal practice and the development of legal theories regarding gender. We will interrogate the relationship between theory and practice and the ways in which feminist jurisprudence has taken shape in the dynamics of this relationship. POLS 114 and 230 recommended prerequisites.

439-3 Comparative Law and Courts. In the United States, topics ranging from abortion to gay rights and the government surveillance are inevitably "solved" by the Supreme Court. Yet for many years the Supreme Court stood alone in the world in being able to overturn government policy. Increasingly, courts all over the world - often prodded by social actors - have begun developing their own unique solutions to these constitutional questions, in many cases challenging accepted social values and mores along the way. In this course we will investigate the development of courts and constitutional rights around the world, including both national rights and international human rights.

444-3 Policy Analysis. An examination of basic concepts in the policy sciences, approaches to policy analysis, applications to selected areas of policy and instruments of policy development.

446-3 Museum Administration. A comprehensive introduction to museum administration and management, including fiscal and budget oversight; an understanding of museum ethics; acquisition, conservation and exhibition planning; personnel matters; and museum research. Museum practicum and research stressed.

448-3 Museum Colloquium. Provides the student with in-depth experience with four major functional areas of museum administration, curation, education and exhibition-through project-based, practical experience in a professional, working museum. Prerequisite: AD 447 or consent of instructor.

455-3 Democratization: Global Struggles for Political Change. An examination of transitions to democracy from authoritarian rule in countries around the world. Emphasis is on understanding from comparative perspective on the social, economic, institutional, political, cultural and international circumstances that promote, inhibit, and even reverse the spread of democratic forms of government. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement.

456-3 Gender and Global Politics. (Same as WGSS 446) An advanced course examining gender systems and women's situations across cultures and countries. This course also studies the impact globalization has had on gender issues by looking at women's activism at international and transnational levels. Topics covered include women's political representation, gender and culture, women's social movements, gender and development, and gendered policy issues. POLS 250 recommended.

459-3 Russia and the Post-Soviet States. This course examines political developments in Russia and the other fourteen Soviet successor states that gained (or regained) independence following the demise of the Soviet Union in 1991. Particular attention is paid to the degree to which Soviet legacies of communist political institutions, state socialist economic

policies and ethno-federalism continue to shape the politics and economics of these countries in the post-independence period. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement.

460-3 European Politics. This course provides students an overview of European integration and a better understanding of the functioning of the European Union. The course opens with a survey of historical developments in both Eastern and Western Europe from 1914 to 1989. After this historical overview, the institutions and policies of the European Union are studied in detail.

461-3 Asian Politics. What explains the economic transformation that has spread from India to China? Why has this so-called “economic miracle” bypassed other countries in the Asian continent? Why have democratic institutions been adopted in certain countries and not in others? This course provides a broad overview of the politics and economics of South and Southeast Asia since 1945.

467-3 Middle East Politics. This course is designed to examine the regional politics and security of the Middle East and North Africa in a historical and comparative context. This course discusses the historical evolution of the modern states in the region, the dynamics of inter-Arab and Arab-Israeli politics and security, the role of ethnicity and religion in domestic and regional politics, and great powers’ penetration of the region.

475-3 International Law. Rules and practices governing states in their relations in peace and war. Prerequisite: POLS 270 recommended.

476-3 Religion and Politics. (Same as SOC 476) Examines the connection between religious beliefs and institutions and political beliefs and institutions. Comparative studies will focus on religious political movements in the United States and throughout the world.

477-3 American Foreign Policy. This course surveys the conduct, goals and evolution of American foreign policy since World War II. It analyzes such issues as the role of institutions, culture and individuals in the formulation of American foreign policy, the interaction between domestic and foreign politics, and the debate over American grand strategy. Prerequisite: POLS 270 recommended.

480-3 Seminar in International Relations. Discussion-based course analyzing empirical and normative (ethical) issues in the study of international relations. Particular emphasis is placed on developing students’ critical thinking skills. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement. Prerequisite: POLS 270 recommended.

500-9 (3,3,3) Political Methodology. Seminars in empirical research methods (a) Research design. Course covers quantitative and qualitative empirical studies of politics. (b) Introduction to Statistical Analysis. Topics include measurement, probability theory, statistical inference, and estimation for political science research (c) Advanced Statistical Analysis. This course covers regression and other statistical modeling in political science.

501-3 Qualitative Methods. Seminar in qualitative methodology and methods in political science.

502-3 to 6 Topical Seminar in Research Methods. Advanced seminar in empirical research methods. Topics will vary by instructor.

503-3 Research Methods for Public Administrators. The course aims to familiarize students with analytical techniques and research methods used currently by public administrators. Provides an introduction to applied statistics and data analysis for problems of interest to public administrators. Restricted to enrollment in MPA graduate program or consent of the department.

504-3 Pro-Seminar in Political Theory. The course will survey a sampling of the best works from the broad and diverse spectrum of political theory.

505-3 to 9 (3,3,3) Topical Seminar in Political Theory. Advanced seminar in political theory. Topics will vary by instructor.

510-3 Pro-Seminar in American Politics. Designed to survey the major literature in the field of American politics at the graduate level.

512-3 to 9 (3,3,3) Topical Seminar in American Political Institutions. Advanced Seminar in American political institutions. Topics will vary by instructor.

513-3 to 6 Topical Seminar in Political Behavior. Topic will vary with instructor. Student should see director of graduate studies for advanced syllabus.

514-3 Seminar in Contemporary Intergovernmental Relations. An examination of relationships among national, state, and local governments in the American federal system, with emphasis on recent literature and contemporary issues. Prerequisite: POLS 340. Restricted to enrollment in MPA graduate program or consent of department.

515-3 Seminar in Urban Politics. Student should see director of graduate studies for advance syllabus.

516-3 Seminar in Political Behavior. An overview of the study of political behavior in American and comparative politics.

520-3 Seminar in American Political Institutions. An overview of the study of American political institutions.

530-3 Pro-Seminar in Public Law. A survey of the major literature in the field of public law at the graduate level.

532-3 Nonprofit and Public Grant Writing. Nonprofit and Public Grant Writing examines the theories, skills and practices for writing grants for nonprofit and public organizations. Students will test what they have learned by preparing grants for actual nonprofit and public organizations. Prerequisite: POLS 537 with a grade of B or better.

533-3 Seminar in Public Policy. This course examines the approaches to the study of public policy, including a discussion of public policy theory. The course will focus on the study of how policy is developed, applied, evaluated, and developed over time.

534-3 Governance Networks in Public Administration. Explores the shifting locus of public service delivery over time, and examines alternative organizational arrangements through which public services are provided to citizens. Emphasis is placed on the environment, structure and management delivery networks including combinations of public, private, and not-for-profit actors. Explores joint agreements, public-private partnerships, and contracting regimes as element that bind network actors in the process of delivering high quality public services. Additional focus is invested in evaluating the leadership and management strategies that can ensure accountable and ethical public policy implementation by non-governmental organizations that act with the authority of

government. The factors that facilitate network performance are also explored. Prerequisite: POLS 537 with a grade of C or better.

535-3 Ethical Foundation of Public Service. Examines the ethical dimensions of public service, particularly as it relates to the cultural context to the United States, while emphasizing the responsibility of the public manager to act with integrity. Assesses the virtues necessary for moral leadership in the public sector, as well as managerial strategies that reinforce ethical climates in public organizations and ethical behavior among public employees. Focuses on contemporary cases to explore the practical relevance of theories of morality and ethics. Special attention will be invested in examining the ethical implications of contemporary modes of governance and tensions between managerial and democratic values. Prerequisite: POLS 537 with a grade of C or better

536-3 Seminar in Comparative Public Law. An examination of legal systems around the world.

537-3 Foundations of Public Administration. Introduction to the study and practice of administrative process and public management. Theoretical, political, and practical issues of organizing, staffing, financing and implementing government decisions and other issues are surveyed.

538-3 Topical Seminar in Public Law. Advanced seminar in public law. Topics will vary by instructor.

539-3 Program Analysis and Evaluation. The analysis and evaluation of governmental programs. Emphasis is placed upon use of analytical techniques to determine program impact and the use of evaluation in governmental decision making. Prerequisite: POLS 503. Restricted to enrollment in MPA graduate program or consent of department.

540-3 Seminar in Public Management. Course is designed for advanced MPA students and examines social, political, legal and managerial constraints on the behavior of public administrators. Issues in ethics and the public's expectations of professional administrators are also examined. Restricted to students who are in the MPA program who have completed at least three required MPA courses, or the consent of the department.

541-3 Seminar in Applied Problems of Public Administration. Study of selected problems in public administration and policy. Emphasis placed on the practitioner's perspective. Prerequisite: 340 or equivalent. Restricted to enrollment in MPA graduate program or consent of department.

542-3 Public Budgeting and Fiscal Administration. An examination of the theory and practice of budgeting in the public sector and of selected elements of fiscal management. The course focuses on administrative aspects of budgeting and is oriented toward preparation of students for careers in the public service. Students utilize primary materials in conducting individual or class projects aimed at development of budgetary skills. Prerequisite: POLS 340 or equivalent. Restricted to enrollment in MPA graduate program or consent of department.

543-3 Human Resource Management. A study of the processes and procedures used in contemporary public personnel systems. Emphasis is placed on examination of competing models of personnel administration, application of personnel management strategies to specific case problems and public sector labor relations. Prerequisite: POLS 340 or equivalent.

Restricted to enrollment in MPA graduate program or consent of department.

544-3 Program Analysis. This course focuses on the development and analysis of public policy alternatives and how they are used in governmental decision making.

545-3 Organization Theory and Behavior. An examination of various approaches to describing and understanding public organizations and the individuals within them. Emphasis is placed on study of the important theoretical literature in the field and on the applications of the theory of practical management problems in governmental units and agencies. Prerequisite: POLS 340. Restricted to enrollment in MPA graduate program or consent of department.

546-3 Leadership in Public Administration. An examination of contemporary theories of leadership and their applicability on the public and non-profit sectors. The course emphasizes the range of behaviors and actions relevant to leadership in contemporary governmental organizations and the analysis of factors resulting in leadership success or failure. Restricted to enrollment in MPA graduate program or consent of the department.

547-3 Nonprofit Marketing and Fundraising. This course examines the unique resource development needs of nonprofit organizations and public organizations and looks at the principles and practical sides of meeting those through relationship management, marketing and fundraising. Time will be taken to look at all the aspects of a successful relationship, fundraising and marketing management plan. Students will be expected to participate in at least one fundraiser for a local nonprofit during the semester.

548-3 Seminar in Comparative Public Administration. Comparative study of national and subnational public administrative politics, structures, policies and programs across nations and cultures.

549-3 Administration of Nonprofit Organizations. Examines the characteristics of nonprofit organizations that distinguish them from the public and for-profit sectors. Explores social and economic functions of nonprofits and such administrative issues as fundraising, working with volunteers and governing boards, satisfying tax codes and service distribution. Prerequisite: POLS 340 or equivalent. Restricted to enrollment in MPA graduate program or consent of department.

550-3 Pro-Seminar in Public Administration. A survey of the major literature in the field of public administration. The course will synthesize and integrate the literature and provide an overview of topics to be covered in greater detail in other seminars. Required of M.A. and Ph.D. students offering public administration as a graduate area before enrolling in more advanced subject-matter seminars.

551-3 Aviation Policy, Law and Regulation. (Same as AVM 551) Examination of the history of American aviation policy, law and regulation. The course focuses primarily on the development, implementation and enforcement of aviation policies and regulations at the federal level. Special attention is paid to the interaction of various government agencies and constituency groups, such as the aircraft industry, airport authorities, airlines, private pilots and passengers. In addition to the historical survey, students will analyze current policy and regulatory trends and identify future problems and opportunities for American aviation policy. Restricted to enrollment in MPAA graduate program or

consent of instructor.

552-3 Advanced Airport Administration. (Same as AVM 552) This course will address the role and function of the airport administrator, especially related to the tasks of developing, operating and maintaining various airport services to meet the needs of key airport users. This course will study key airport administration cases at primary, commercial service, reliever and general aviation airports. Meeting key airport regulations concerning operations and security will be a focus of the course. Restricted to enrollment in MPAA graduate program or consent of instructor.

553-3 Advanced Aviation Safety Administration. (Same as AVM 553) The Aviation Safety Administrator's job function and responsibility for safety and accident prevention within an aviation organization is examined using the case study method. The relevant theory, concepts, procedures and techniques of resource allocation, organizational design, decision modeling, task assignment, delegation of authority and responsibility, establishment of organizational goals and priorities and risk management as they relate to Aviation Safety are included. The job functions of an Aircraft Accident Investigation Team and of an Aviation Safety Inspector will be studied. Aviation safety administration literature will be reviewed. Restricted to enrollment in MPAA graduate program or consent of instructor.

554-3 Aviation Planning. (Same as AVM 554) Examination of aviation planning at the international, federal, state and local levels. The course focuses primarily on federal aviation planning, but considerable attention is paid to the interdependent relationship between the various levels of planning. Special attention is paid to the planning process and the role of various agencies and client groups within the aviation community. Restricted to enrollment in MPAA graduate program or consent of instructor.

555-3 International Aviation. An examination of the economic, legal, political and administrative milieu of international aviation. Students will study the history of the bilateral route agreements, cabotage and the legal and institutional arrangements that have evolved in international air transportation. The course will compare and contrast the domestic and international aviation policy environment. Particular attention will be placed on the emergence of international foreign ownership and marketing alliances that have been created recently, both between airlines themselves, and the dominant computer reservations systems (CRS) in existence. Other topics that will be discussed include both domestic and international labor, infrastructure and tourism development policies. Prerequisite: POLS 551. Restricted to enrollment in MPAA graduate program or consent of instructor.

556-3 Seminar in Municipal Administration. This course explores the historical origins and management of municipalities and the policy-making process in the modern American city. Emphasis is on the administrative organizational structure of municipal government, with its council, committees and staff, and the associated issues.

557-3 Public Financial Administration. The seminar provides a basic understanding of the public budgeting decision-making processes and financial management practices. It provides students with knowledge and hands-on experience of collecting and analyzing governmental data, generating financial reports, and presenting findings. It also provides students with an understanding of revenue sources and different factors that could

potentially influence collections. Moreover, it gives students the opportunity to acquire experience in revenue forecasting and budget decision-making through homework assignments and in-class exercises. Prerequisite: POLS 542 and POLS 503.

558-3 Museum Colloquium. Provides the student with in-depth experience with four major functional areas of museums-administration, curation, education and exhibition-through project-based, practical experience in a professional, working museum. Prerequisite: AD 447 or consent of instructor.

559-3 Museum Collection Management. Provides students with the knowledge required to professionally use and manage a museum's collection. Addresses policies and principles of collections management, law, loans and custody, and acquisitions. Prerequisite: AD 447 or consent of instructor.

560-3 Pro-Seminar in Comparative Politics. Survey of the major literature in comparative politics at the graduate level.

568-3 Research Problems in International Studies. Discussion, design and execution of research projects on non-state, sub-national, national, and supra-national actors and processes that have transnational or world systemic consequence. Required of all students with a Ph.D. concentration in international studies.

568-3 Research Problems in International Studies. Discussion, design and execution of research projects on non-state, sub-national, national, and supra-national actors and processes that have transnational or world systemic consequences.

569-3 to 9 (3,3,3) Topical Seminar in Comparative Politics. Advanced seminar in comparative politics. Topic will vary by instructor.

570-3 Pro-Seminar in International Relations. Survey of the major literature in international relations at the graduate level.

580-3 to 9 (3,3,3) Topical Seminar in International Relations. Advanced seminar in empirical international relations. Topic will vary with instructor.

590-1 to 6 Readings. Supervised readings in selected subjects. Prerequisite: the section of 592 for the field in which readings are to be done, 545 for reading in Public Administration and Policy Analysis, or 500A for readings in Methods.

591-1 to 9 Individual Research. Selection, investigation and writing of a research paper under the personal supervision of a member of the department graduate staff. Prerequisite: completion of the appropriate pro-seminar for the field in which readings or individual research is to be done.

592-15 (3,3,3,3,3) Foundations of Political Science. Supervised readings in "classics" of the discipline: (a) American Politics and Government, (b) Comparative Politics, (c) International Relations, (d) Public Law, (e) Political Theory.

593-1 Preprofessional Seminar in Political Science. Designed to give the student an introduction to the major professional roles in the discipline. The requirements of teaching, research, publication and service are covered with discussion of where each fits into the professional role requirements and examples of how each is accomplished. Required of all Ph.D. and M.A. students in political science and other teaching assistants in political science. Graded S/U only.

594-1 Preprofessional Seminar in Public Administration. Guides students in preparing for the Comprehensive Exam and Professional Portfolio displaying competencies developed through their course work. Assists students writing a Research Paper through the proposal and committee process. Preparation of resume,

conducting job searches and other professional development topics are also addressed.

595-1 to 6 Internship in Public Affairs. Fieldwork in the office of a governmental or quasi-governmental agency. The internship is arranged by the field coordinator of the M.P.A. degree program and provides a stipend as negotiated by the coordinator and agency representative. A paper in which the student correlates academic knowledge with practical internship experience is required. Mid-career M.P.A. students may receive credit upon completion of a paper relating previous work experience to public administration literature and theory. Restricted to enrollment in MPA graduate program or consent of department. Graded *S/U* only.

596-3 Research Paper in Public Affairs. Upon successful completion of core courses, the student expands and develops a previously written MPA graduate program paper. The project involves an issue or problem in public administration and is written with the approval and under the supervision of the student's committee chair. Graded *A/B/C/D/F* only. Restricted to enrollment in MPA graduate program or consent of department.

598-1 Dissertation Prospectus. Workshop in dissertation topic selection and prospectus writing; enrollment required prior to completing preliminary examinations.

599-1 to 6 Thesis. Maximum of six hours to be counted toward a degree. Special approval needed from the instructor.

600-1 to 12 (1 to 12 per semester) Dissertation. Minimum of 24 hours to be earned for the Doctor of Philosophy degree.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Psychology

www.cola.siu.edu/psychology/
gradpsyc@siu.edu

COLLEGE OF LIBERAL ARTS

Graduate Faculty:

Cashel, Mary Louise, Associate Professor, Ph.D., University of North Texas, 1997; 1997. Child and adolescent assessment; juvenile delinquency and preventative interventions; PTSD.

Chwalisz Rigney, Kathleen, Professor, Ph.D., University of Iowa, 1992; 1992. Health psychology; neuropsychology; group process and intervention; personality.

Clancy Dollinger, Stephanie, Associate Professor, Ph.D., Syracuse University, 1989; 1989. Successful aging; lifespan identity development; caregiving.

DiLalla, David, Associate Professor, Associate Provost, Ph.D., University of Virginia, 1989; 1990. Personality and psychopathology; personality assessment; computer-assisted assessment; behavioral genetics; sexual violence; social development.

DiLalla, Lisabeth, Professor, Ph.D., University of Virginia, 1987; 1992. Behavioral genetics, social cognition.

Dillon, Ronna, Professor, *Emerita*, Ph.D., University of California, Riverside, 1978; 1978.

Dollinger, Stephen J., Professor, *Emeritus*, Ph.D., University of Missouri, 1977; 1977.

Drake, Chad, Assistant Professor, Ph.D., University of Mississippi, 2008. Acceptance and Commitment Therapy and Training; Relational Frame Theory; contextual behavioral science; behavioral measures of cognition; therapeutic change.

Etcheverry, Paul E., Associate Professor, Ph.D., Purdue University, 2004; 2007. Interpersonal relationships and health; social network; influence on relationship outcomes and substance use; social cognitive factors influence in interpersonal relationships.

Fehr, Karla, Assistant Professor, Ph.D., Case Western Reserve University, 2013. Psychosocial outcomes for children with medical conditions, including risk and resiliency factors, coping, and intervention development and dissemination; the importance of pretend play for children's socioemotional development; the development of play intervention protocols to improve pretend play skills.

Gannon, Linda, Professor, *Emerita*, Ph.D., University of Wisconsin, 1975; 1975.

Gilbert, Brenda O., Associate Professor, *Emerita*, Ph.D., University of Florida, 1985; 1986.

Gilbert, David G., Professor, *Emeritus*, Ph.D., Florida State University, 1978; 1985. Brain, genetic, personality, and stimulus/environmental factors promoting substance use, smoking, and marijuana; emotions; EEG; brain imaging; eye-tracking and attention.

Greer-Medley, Tawanda M., Associate Professor, Ph.D., Southern Illinois University at Carbondale, 2003. Perceived racism in health care; the contribution of racism and chronic oppression to existing health disparities; the impact of minority stressors on African American college students; racial and ethnic concerns in mental health counseling, and neural correlates

of stress and cardiovascular responses for African Americans diagnosed with hypertension.

Habib, Reza, Associate Professor and *Interim Chair*, Ph.D., University of Toronto, 2000; 2003. Cognitive neuroscience; brain imaging; cognition and memory.

Hoane, Michael R., Professor, Ph.D., Texas Christian University, 1996; 2004. Animal models of traumatic brain injury and neurodegenerative disease; recovery of function.

Hylin, Michael, Assistant Professor, Ph.D., Northern Illinois University, 2010. Biochemical systems that underlie neurocognitive dysfunction following traumatic brain injury (specifically mild and repetitive injury); pathways associated with the extracellular matrix, inflammation and axonal injury; development of novel strategies for neurocognitive rehabilitation following traumatic brain injury.

Jacobs, Eric A., Associate Professor, Ph.D., University of Florida, 1997; 1999. Experimental analysis of behavior; human operant behavior; verbal behavior; choice and self-control; behavioral ecology; behavioral economics; behavioral pharmacology; contingency management; radical behaviorism; cultural materialism.

Jensen, Robert, Professor, *Emeritus*, Ph.D., Northern Illinois University, 1976; 1981.

Kertz, Sarah, Assistant Professor, Ph.D., University of Louisville, 2011. Development and treatment of anxiety disorders; developmental psychopathology of worry in children; conceptual models of generalized anxiety and worry; treatment outcomes for anxiety disorders.

Kibby, Michelle Y., Associate Professor, Ph.D., The University of Memphis, 1998; 2004. Neuropsychology; brain-behavior relations; reading disorders; ADHD; child assessment.

Komarraju, Meera, Professor and *Dean*, Ph.D., Osmania University Hyderabad, India, 1983; Ph.D., University of Cincinnati, 1987; 2006. Personality and cross-cultural differences in academic motivation and achievement; gender, ethnicity, and leadership in the workplace.

Lakshmanan, Usha, Professor, Ph.D., University of Michigan, 1989; 1990. Psycholinguistics; bilingualism; child first language acquisition (monolingual & bilingual); child and adult second language acquisition; language and cognition.

McHose, James H., Professor, *Emeritus*, Ph.D., University of Iowa, 1961; 1961.

McKillip, John A., Professor, *Emeritus*, Ph.D., Loyola University of Chicago, 1974; 1975.

O'Donnell, James P., Associate Professor, *Emeritus*, Ph.D., University of Pittsburgh, 1965; 1965.

Pitz, Gordon F., Professor, *Emeritus*, Ph.D., Carnegie Mellon University, 1963; 1963.

Radtke, Robert C., Associate Professor, *Emeritus*, Ph.D., State University of Iowa, 1963; 1966.

Ramanaiah, Nerella, Professor, *Emeritus*, Ph.D., University of Oregon, 1971; 1971.

Rodriguez, Benjamin, Associate Professor, Ph.D., The Catholic University of America, 2001; 2003. Anxiety disorders; PTSD; epidemiology; social and public speaking anxiety.

Schill, Thomas R., Professor, *Emeritus*, Ph.D., Oklahoma State University, 1963; 1963.

Schlesinger, Matthew, Associate Professor, Ph.D., University of California, Berkeley, 1995; 2000. Early cognitive development;

problem-solving; motor control; computational models of sensorimotor cognition.

Schmeck, Ronald R., Professor, *Emeritus*, Ph.D., Ohio University-Athens, 1969; 1969.

Snyder, John F., Associate Professor, *Emeritus*, Ph.D., Loyola University, 1965; 1968.

Swanson, Jane L., Professor, *Emerita*, Ph.D., University of Minnesota, 1986; 1986. Career choice and development; career assessment; adolescent career exploration.

Tinsley, Howard E.A., Professor, *Emeritus*, Ph.D., University of Minnesota, 1971; 1973.

Vaux, Alan, Professor and *Dean*, *College of Liberal Arts, Emeritus*, Ph.D., Trinity College Dublin, 1979; Ph.D., University of California/Irvine, 1981; 1980.

Yanico, Barbara, Associate Professor, *Emerita*, Ph.D., The Ohio State University, 1977; 1978.

The Department of Psychology (www.cola.siu.edu/psychology/) offers graduate work leading to the Master of Arts, Master of Science, and Doctor of Philosophy degrees with a major in psychology with concentrations in the following areas: Applied Psychology, Brain and Cognitive Sciences, Clinical Psychology, and Counseling Psychology. The primary emphasis is on doctoral training, for which the master's degree is a prerequisite usually earned en route to the doctorate. We do not admit students who seek a terminal master's degree.

The goal of graduate study in the Department of Psychology at SIUC is to develop psychologists who will have a broad perspective and scientific sophistication as well as the requisite skills to advance the field of psychology and meet changing needs. The program emphasizes formal course work in the core curriculum and in the concentrations, preprofessional activities in training assignments, research, teaching, and practicum opportunities.

Admission and Advisement

The Department of Psychology and Graduate School applications form one combined application that should be submitted electronically through the ApplyYourself system. The link to ApplyYourself is available at the Graduate School website. There is a supplemental application (Part Two), specific to the Department of Psychology that must be submitted along with the main online application. Separate forms are not required for application for financial assistance, except for Graduate School fellowships. Students will be accepted for graduate work in psychology only upon approval by the departmental admissions committee as well as the Graduate School. Evaluations of applicants by the departmental admissions committee are based on information from the application form, GRE scores, transcripts, and letters of recommendation. This program requires a nonrefundable \$65.00 application fee; applicants must pay this fee by credit card through ApplyYourself.

Upon admission to the department, each student is assigned to a faculty adviser, who assists in academic matters, including the planning of the student's program of study: required courses, planned electives, anticipated dates for fulfillment of specified requirements, and so forth.

A new adviser may be assigned to a student for 2 reasons: (a) the student or adviser may request a change of adviser; (b)

the student may change to a different area of concentration. Requests for a change of adviser should be made in writing to the student's area committee. To change area of concentration, the student should petition the sub-committee of the new area.

Core Curriculum

All students must complete the following minimum requirements which may be supplemented by requirements specific to concentration areas.

1. Two of three courses from 522, 524, and Educational Psychology 507.
2. 509 for students who have not completed a course in the history and systems of psychology.
3. Thesis (599) registration; students enrolled in the master's degree program should complete the thesis requirement (599, 4–6 hours) by the end of the second year.
4. (Students in the Clinical and Counseling areas only) one course from each of the four core coverage areas specified by the American Psychological Association. A list of courses which meet core coverage requirements is maintained by the department.

Areas of Concentration

APPLIED PSYCHOLOGY CONCENTRATION

The Applied Psychology (AP) concentration program is designed for students interested in research careers dealing with applied problems in non-academic and academic settings. The program provides students with training in research and data analysis methods that can be applied to a variety of problems in the public and private sectors.

Students in the AP concentration take the following courses in addition to departmental requirements described above. (a) Statistics and measurement: PSYC 522, 524, 525, and either 529 or 575; (b) Program evaluation and research methods: PSYC 465, 523, and 564; (c) At least three of the following Psychology content courses: PSYC 411, 461, 511, 515, 553, 565, 566, 567, 568, or other courses approved by the faculty. In addition AP students take 571 (Proseminar in Applied Psychology) during their first semester in the program, and PSYC 569 (Applied Research Consultants) from their second year until admission to the doctoral program or for 2 summers and 4 semesters, whichever is longer. AP students develop a specialization consisting of at least three graduate courses, additional readings, and/or independent study. A specialization plan and paper is developed with and approved by a specialization committee.

BRAIN AND COGNITIVE SCIENCES CONCENTRATION

The Brain and Cognitive Sciences program (BCS) emphasizes cognitive behavior approached from a combination of developmental (infancy and childhood, adolescence and aging), neurobiological (neurophysiology, neuropsychology, genetics), behavioral (human and animal experimentation) and computational (neural networks, statistical analyses, intelligent software agents) perspectives. Students specializing in Brain and Cognitive Sciences typically pursue careers in academic settings such as departments of psychology, neuroscience, cognitive science or medical schools, or in non-academic settings

such as pharmaceutical companies, hospitals, or in government research facilities.

In addition to department requirements, BCS students will take four courses from the following three pairs: PSYC 511 and 515 (Cognitive), PSYC 554 and 555 (Developmental), and PSYC 514 and 516 (Biopsychology). They must choose at least one course from each pair. Students will get experience with at least two different research methodologies (behavioral/cognitive experimentation, computational modeling, neurobiological experimentation, psychological assessment) either through individual research or appropriate course work, and must enroll for PSYC 572 (BCS proseminar) throughout their tenure in the department. An additional four to six courses are required for the specialization.

CLINICAL PSYCHOLOGY CONCENTRATION

The Clinical Psychology program, accredited since 1961 by the American Psychological Association and the current Commission on Accreditation, is designed to train clinical psychologists for careers in clinical service, teaching and research. In addition to completing a required departmental core (designed in accordance with APA accreditation and state licensing board requirements), students take required courses in clinical skills, psychopathology, assessment, therapy, and ethical/professional issues (PSYC 594C, 535 or 432, 540, 530, and 598).

Students in the Adult Clinical Psychology specialization take required courses in experimental approaches to personality and experimental approaches to psychotherapy (532 and 539), and several electives focusing on assessment and treatment. Students in the Child Clinical Psychology specialization take two required developmental psychology courses (one of which usually fulfills a core requirement), and several courses in child assessment plus child treatment (543, 556, and 559).

COUNSELING PSYCHOLOGY CONCENTRATION

The Counseling Psychology program, approved since 1961 by the Accreditation Committee, Education Directorate of the American Psychological Association, is designed to teach students a wide range of skills which will prepare them to function as scientist-practitioners. Graduates are qualified for employment in a university setting (either in an academic department or a counseling center), in hospitals, community agencies, and educational and correctional institutions. The student is expected to develop competence in counseling, psychological assessment, research, and teaching. The required courses are as follows: 523, 525, 526, 530, 536, 537, 538, 540, 548, 553, 558, 561, 594F, and 598.

Research, Practicum, and Training Assignments

Research or practica are required in each area of concentration. In addition, each term the student must be engaged in a training assignment which supplements formal course work by professional activities such as research, teaching, or clinical service. The assignment varies according to the needs, professional goals, and competencies of the student, and increases in responsibility as the student progresses. The assignments require from 10 to 20 hours of service per week. This is a degree requirement of all students each term and is independent of any financial support. Therefore, each term the

student signs up for one hour of 597.

Master's Degree Requirements

The master's degree requires a minimum of 48 semester hours of acceptable graduate credit, distributed according to the requirements of the student's major area, and the completion of an approved thesis. The master's thesis may be either original research or the replication of an important study. The master's degree is a prerequisite for the doctorate.

Doctoral Requirements

Admission. Admission to the Ph.D. program requires a master's degree, a grade point average of 3.25 or above in graduate studies, and acceptance by the department. A student who receives the master's degree from SIU must apply formally to the Graduate School for admission to doctoral-level study, and must be approved by the faculty.

Records of students entering the program with a master's degree from another institution are evaluated by the departmental admissions committee which notes deficiencies, recommends methods for removing them, and specifies a time limit to do so. Such deficiencies must be removed before the student can be classified as a Ph.D. candidate. The student is recommended to the graduate dean for admission to Ph.D. candidacy only when core curriculum requirements and the preliminary examination(s) have been satisfactorily completed.

Accelerated Entry into Ph.D. Degree Program. Students enrolled in the M.A. degree program may be admitted directly to the Ph.D. degree program following departmental certification of graduate work comparable to a master's degree in psychology at SIU. Accelerated entry is acceptable only for students who have completed substantial work in other programs in psychology which grant the Ph.D. degree but not a master's degree. Students seeking accelerated entry may apply after enrollment at the master's level for one semester. Applications for accelerated entry are reviewed and decided by a faculty committee appointed by the department chair.

Internship. Doctoral students who are concentrating in counseling or clinical psychology must complete an approved internship. The internship is viewed as an integral part of training and the Ph.D. degree is not awarded until the completion of all academic work and the internship. Students are responsible for scheduling and obtaining internships. Internships in counseling and clinical psychology require a full-time experience either for one calendar year, or for two years of half-time experience. Counseling and clinical students are approved for internship after completion of their master's degree, major and minor preliminary examinations, and all courses required for the Ph.D. Clinical students must have an approved dissertation prospectus before applying for internship.

Students in applied psychology are encouraged to complete an internship in an applied setting away from campus that is selected with the help of their faculty advisers in their major area of concentration.

Preliminary Examinations. Ph.D. candidacy is contingent upon successful completion of a written preliminary examination in the student's major area of concentration. The examination is composed primarily of essay questions requiring substantive

knowledge of empirical and theoretical topics. Questions are not limited to course content.

Every student is expected to pass each examination on first taking. In any event a second failure on a preliminary examination will result in a thorough faculty review of the student's entire academic record in order to determine whether the student will be allowed to continue in the program and, if continued, under what conditions.

Major/Comprehensive. Fields of concentration for the major/comprehensive preliminary examination are listed below:

1. Experimental. Either applied psychology or brain and cognitive science may be selected for the comprehensive examination.
2. Clinical. The major examination includes the following: psychological assessment, psychotherapy, psychopathology, research methods, and professional/ethical issues. In addition for the student, the examination reflects the specialization emphasis, i.e., adult or child.
3. Counseling. The major examination includes the following areas: (a) adult personal, social, and career development, (b) assessment, (c) group and individual counseling theories and techniques, (d) research methodology and measurement, and (e) professional issues.

Major/comprehensive examinations are scheduled by the department once a term. Notices are posted well in advance and students are expected to notify the graduate secretary of their intention to take the examination. Examination committees are appointed by the chair.

Minor/Specialization. In addition to the major/comprehensive preliminary examination, a specialization paper is required in the experimental area.

Dissertation. Each candidate for the Ph.D. degree must write a dissertation showing high attainment in independent, original scholarship and creative effort. A total of 24 semester hours is required. A maximum of 8 hours of dissertation credit taken prior to passing the major preliminary examination will count. A student may not hold a prospectus meeting before successful completion of the preliminary examination.

Thesis and Dissertation Committee

Because the thesis or dissertation project and the proposed committee composition must be formally approved by the department chair, the student should submit the proposed committee in writing for approval by the chair well in advance of the prospectus meeting.

A master's thesis committee consists of 3 or more faculty members and a dissertation committee of 5 or more faculty members (counting the committee chair). Committee chairs and a majority of committee members must be tenure-track faculty of the Department of Psychology. Thesis and dissertation committees must have 1 Psychology faculty member outside the student's program area—to better reflect the diversity of departmental perspectives. Dissertation committees also must have a faculty member from a department other than Psychology.

Prospectus. Prior to starting the empirical research on a thesis

or dissertation, a student must submit a written prospectus to each member of the committee at least one week prior to the prospectus meeting. A carefully written prospectus ordinarily serves as the opening chapters of the thesis or dissertation.

The approval of the prospectus indicates that the committee members accept the research design. Faculty members not on the committee may attend the prospectus meeting, or may forward suggestions and comments to the committee chair prior to the meeting. Prospectus meetings are not scheduled during the recess period between semesters.

If the prospectus is approved with no major modifications, a letter of approval, noting any minor modifications is sent by the committee chair to the department chair for filing in the student's permanent records. If major modifications are needed, the student may be asked to rewrite the prospectus, circulate the revised prospectus and arrange another committee meeting. A prospectus must be approved at least one semester before graduation.

Style. The student has the option of writing the thesis or dissertation in the traditional fashion or in journal style. In the latter case, ancillary material (full survey of literature, subsidiary analyses, etc.) are placed in the appendices, although figures and tables appear in the text. The psychology department prefers that citations, table headings, etc. follow the APA style (Publication Manual of the American Psychological Association, latest edition, Washington, D.C.).

General Procedures. Students should not register for 599 or 600 hours until they have supervisors and will actually be using university facilities, or faculty time for assistance and direction.

Prior to graduation (a minimum of 5 weeks for master's students and 8 weeks for doctoral students), and at least one week prior to the oral defense meeting, the candidate must submit a final draft of the thesis or dissertation to the full committee so that appropriate suggestions can be made.

Number of Copies. Two bound copies of the complete thesis or dissertation are required: one for the committee chair, and one for the departmental thesis and dissertation library.

Oral Examination

The Department of Psychology requires an oral examination, conducted by the student's thesis or dissertation committee, for each M.A. and Ph.D. candidate. The examination covers the thesis or dissertation and also includes questions designed to ascertain the student's general competence in psychology.

Oral examinations are open to all interested observers. Notices of the time and place of the examination, and abstracts of the thesis or dissertation, are circulated throughout the department and, in the case of Ph.D. examinations, throughout the University. Two copies of the abstract should be given to the graduate program secretary at least one week prior to the oral defense meeting.

The graduate program secretary delivers the oral examination form and the thesis or dissertation evaluation form to the committee chair the day before the orals are scheduled. Orals meetings are not scheduled during the recess period between semesters.

General Information

Waiving of Course Requirements. Students who wish to have a course waived should consult with their advisers, the course instructor, and the head of their major area. One of the following recommendations will be made: (a) the course will be waived; (b) a proficiency examination (theoretical, practical, or both) will be given prior to deciding on the student's request; (c) the request will be refused and the student will take the course. A student may appeal the decision by writing a letter to the department chair requesting that the case be reviewed.

Grading Policies. Any student who receives a grade of *Inc.* is responsible for contacting the instructor to determine the time allowed for the completion of the course (normally not more than one year).

For internal records to be used within the department only, pluses and minuses are added to the standard *A, B, C* grades reported to the Office of Admissions and Records.

Student Evaluation. All students are evaluated by the faculty at least once a year, normally during fall semester. New students are evaluated in the beginning of spring semester (first year) and students on departmental probation at times specified in their probation. The evaluation is based on the following criteria: (1) academic performance on a ten point rating scale (*A+* = 10); (2) ratings on the training assignment; and (3) progress toward the degree. The student's evaluation may also be based upon evidence relating to professional attitudes or ethical behavior.

Each student's adviser informs the student of the evaluation and of any faculty recommendations as soon as possible after the meeting. In addition, the department chair writes a formal letter notifying the student of the evaluation and recommendations.

Courses (PSYC)

402-3 Psychology and Medicine This course is an extensive review of psychology concepts as they relate to medicine and medical training. The overall goal of this course is to provide review of psychology concepts as they appear in the new form of the MCAT. Prerequisite: PSYC 211..

407-3 Theoretical Issues in Learning. An introduction to the major theoretical issues in learning and their importance. A brief review of the history of such problems will be followed by a summary of the current research concerning these issues. Traditional figures in learning theory will be considered within the context of their positions on specific questions. Prerequisite: PSYC 211 and PSYC 309 or equivalent, or graduate status.

409-3 History and Systems of Psychology. A review of the conceptual and empirical antecedents of modern psychology. Prerequisite: PSYC 211. Restricted to senior status, or graduate status.

411-3 Applied Learning. An in-depth coverage of practical problems concerned with training to which the principles of learning derived from pure laboratory investigations can be applied. Prerequisite: PSYC 211 and PSYC 309 or graduate status.

413-3 Individual Differences. Reviews the reliable and theoretically significant individual and group differences that have been revealed by research in the behavioral sciences. Examines differences in general intelligence, specific verbal

and spatial abilities, stylistic and personality characteristics, as well as such group differences as sex, race and socioeconomic status. Prerequisite: PSYC 211 and PSYC 305, or graduate status.

415-4 Psychopharmacology. A survey of the effects of drugs on the normal and abnormal behavior of humans and animals. A primary focus is upon understanding drug influences on behavior in relation to actions on the nervous and endocrine systems. Prerequisite: PSYC 211 and PSYC 302 or graduate status.

416-3 Recovery of Function Following Brain Damage. A survey of experimental animal and human clinical research as they relate to behavioral recovery following damage in the central nervous system. Recent theories and literature are stressed. Prerequisite: PSYC 211 and PSYC 302, or graduate status, or consent of instructor.

419-3 Behavioral Genetics. Provides an overview of the experimental and quantitative methods used in studying behavioral differences associated with genetic variables. Elementary aspects of genetics will be included in the course, which will examine several aspects of both human and nonhuman behavior. Prerequisite: PSYC 211 or consent of instructor, or graduate status.

420-3 Industrial/Organizational Psychology. Topics in industrial and organizational psychology; applications of psychology to human resource management, such as job analysis, performance appraisal systems, personnel selection and training. Prerequisite: PSYC 211.

421-3 Psychological Tests and Measurements. Introduction to measurement theory and test development. Detailed coverage of selected tests from such areas as intelligence, aptitude and personality, and the use of psychological tests in various settings. Prerequisite: PSYC 211 or graduate status.

425-3 Psychology of Positive Parenting. This course will provide a comprehensive overview of key concepts in parenting, the nature of parenting across the lifespan and specific challenges for parents with children in each of the developmental stages. We will discuss effective strategies for addressing these challenges in addition to programs and approaches that demonstrate a strong evidence base. Special focus will additionally be given to diversity issues, parenting in high risk families and in families with exceptional children. Prerequisite: PSYC 102, PSYC 301.

431-3 Advanced Psychopathology. An advanced presentation of theoretical and empirical issues in contemporary psychopathology research. Explores the role empirical research plays in understanding the features of major psychological disorders and their treatment. Provides a broad understanding of the many factors that contribute to the development and maintenance of abnormal behaviors. Prerequisite: PSYC 211, PSYC 331 or consent of instructor or graduate status.

432-3 Psychopathology of Childhood. An extensive review and systematic evaluation of theories and research pertaining to the behavior disorders of childhood. Emphasis will be upon empirical data and the implications of these data for the classification and treatment of these disorders. Prerequisite: PSYC 211, PSYC 301, PSYC 311 or graduate status.

440-3 Advanced Personality. Advanced presentation of theoretical and research issues related to current issues in

personality psychology. The overarching focus of the course is presentation and discussion of a scientific approach to understanding what personality is, how it can be measured, how it develops, and how it relates to various aspects of individual functioning. Prerequisite: PSYC 211 or consent of instructor.

441-3 Helping Skills in Clinical and Counseling Psychology. (Same as COUN 493.) Provides systematic training in helping skills for students considering clinical or counseling psychology as a career. Students learn to identify and demonstrate such skills as paraphrasing, reflection of feeling, interpretation, and confrontation and will use them in practice situations. Prerequisite: PSYC 211 and PSYC 340. Restricted to senior standing in psychology.

443-3 Bilingualism. (Same as LING 443) Examines the linguistic, psycholinguistic, sociolinguistic and educational aspects of bilingualism, particularly as pertaining to the care and education of bilingualism children. Useful for teachers, speech therapists, doctors, psychologists, counselors, and others working with bilinguals. Practical applications and data-based research. Prerequisite: PSYC 211.

445-3 Psycholinguistics. (Same as LING 445) A broad spectrum introduction to psycholinguistics. Topics to be covered include general methodology for the study of psycholinguistics, the nature of language, theories of human communication, language comprehension and production, first and second language acquisition, meaning and thought, natural animal communication systems, and language and the brain. Prerequisite: PSYC 211.

451-3 Advanced Child Psychology. An assessment of concepts, methods, and research techniques within selected topic areas of developmental psychology. Prerequisite: PSYC 211 and PSYC 301 or graduate status.

461-3 Advanced Social Psychology. Critical examination of contemporary theories and research in social psychology. Practice in application of scientific findings to real-life problems of individuals and groups. Issues treated in depth are chosen for relevance to student's personal needs and career interests. Prerequisite: PSYC 211 and PSYC 307 or graduate status.

464-3 Social Factors in Personality and Behavior. (Same as SOC 426) Advanced study of social psychology from both sociological and psychological perspectives. Analyzes the reciprocal influence of groups and individuals, including the development of self, social interaction, gender and ethnic relations, impression management, interpersonal attraction, and social influence. Prerequisite: PSYC 211 and PSYC 307.

465-3 Applied Social Science Research Methods. This course will introduce students to a variety of research methods and techniques that are used by social scientists in applied contexts. Students will learn the fundamentals of data collection in a variety of contexts, such as from archival data sources, survey research, interviews and focus groups. Students will also learn how to use spreadsheets and statistical software (SPSS) to analyze data, and they will gain experience with report writing. Students will have opportunities to practice and demonstrate these skills through classroom exercises and projects. Prerequisite: PSYC 211. Restricted to senior standing in psychology major or graduate status or consent of instructor.

466-3 Intermediate Statistics in Psychology. Covers statistical techniques relevant to psychology and other social sciences and

provides a bridge between introductory and graduate statistics courses. Topics include one-way and factorial analysis of variance, repeated measures analysis of variance, simple and multiple regression, and analysis of covariance. Prerequisite: PSYC 211. Special approval needed from the instructor.

470-3 Psychology of Race and Racism. (Same as AFR 472) This course reviews the history and evolution of the construct of race as a psychological phenomenon. While the course will be largely psychological in nature, the pervasiveness of race in practically every sphere of life necessitates a multidisciplinary approach. The course will emphasize a theoretical and conceptual approach toward understanding the psychology of racialized thinking. Prerequisite: PSYC 211.

471-3 Judgment and Decision Making. A survey of the academic field of judgment and decision-making, its major methods, theories, results, and controversies. We will examine the generality of experimental results across various domains including gambling, clinical prediction, perception of randomness, and medical decision-making. Prerequisite: PSYC 211 or graduate status.

480-3 Effective Correctional Practices. (Same as CCJ 480) Exploration and evaluation of correctional intervention strategies developed for the sentencing of adjudicated persons. Particular emphasis on examining empirical research literature on effective correctional practices, including programs currently implemented in institutional setting, alternatives to institutional corrections, and community based programs. Prerequisite: PSYC 211.

489-1 to 12 Seminar: Selected Topics. Varied content. Offered as need exists and as faculty interests and time permit. Prerequisite: PSYC 211. Special approval needed from the instructor.

503-3 Individual Differences. Reviews the reliable and theoretically significant individual and group difference that have been revealed by research in the behavioral sciences. Examines differences in general intelligence, specific verbal and spatial abilities, stylistic and personality characteristics, as well as such group differences as sex, race and socioeconomic status. Restricted to graduate status in Psychology.

507-3 Advanced Social Psychology. Review of new and traditional theories and research findings within social psychology. Provides an overview of major areas of study and consideration of more recent topics of study. Topics include (but are not limited to) cultural and evolutionary perspectives in social psychology, motivation, social cognition, self-knowledge, person-perception, cognitive consistency, attitudes, intergroup relationships, stereotyping, and group behavior. Restricted to graduate standing.

509-3 History and Systems of Psychology. A review of conceptual and empirical antecedents of modern psychology. Students research and summarize topics on 20th Century systematic developments. Restricted to graduate status in Psychology.

511-3 Human Learning and Memory. Reviews principles of learning and memory. Covers both human and animal research literature from experimental and theoretical perspectives.

512-3 Sensory Processing. A study of the structure and functions of the sense organs. Emphasizes the psychological data, which describe the function of these organs.

513-3 Human Psychophysiology. Physiology, instrumentation, and methodology of psychophysiological measurements including both autonomic and central nervous systems. Attention will be given to basic and applied research. Restricted to graduate standing.

514-4 Neurobiological Bases of Behavior. An advanced survey of neuroanatomical and neurophysiological principles underlying behavior. Topics covered include structure and function of neurons, synaptic transmission, sensory processing, motor control, development and plasticity of the nervous system and other current topics in neurobiology. Prerequisite: PSYC 302 or equivalent. Special approval needed from the instructor.

515-3 Theory and Research in Cognitive Psychology. A detailed survey of current studies of attention, short-term memory and thought processes. Special approval needed from the instructor.

516-4 Human Clinical Neuroanatomy. Basic functioning of the nervous system, detailed gross anatomy and dissection of the human brain, functional disorders following brain damage, noninvasive cranial nerve examination. The course includes a lab component. Restricted to graduate standing.

517-3 Aging, Memory and Cognition. (Same as GRON 517) A detailed survey of current methodology, research and theory dealing with cognitive and memory processes in later adulthood. Topics covered include attention, memory, reasoning and problem solving, language processing and inference and age-associated pathologies affecting cognition and memory. Special approval needed from the instructor.

518-4 Psychopharmacology and Behavior. A detailed survey of the effect of drugs on the normal and abnormal behaviors of human and animals. A primary focus is upon understanding drug influences on behavior in relation to actions on the nervous system, endocrine system and behavior pathology. Students review and summarize original research in the area. Restricted to graduate status in psychology or permission of instructor.

519-3 Research on Individual Differences. Reviews the reliable and theoretically significant individual and group differences that have been revealed by research in the behavioral sciences. Examines differences in general intelligence, specific verbal and spatial abilities, stylistic and personality characteristics, as well as such group differences as gender, race and socioeconomic status. Students review and summarize original research in the area and lecture on that topic. Restricted to graduate status in psychology or permission of instructor.

520-3 Applications of the Psychology of Learning and Memory. A survey of the theories and methods of training that have resulted from research in the areas of learning and memory. Students will review some of the very recent methods as well as those that are better developed. Practice will be provided. Prerequisite: PSYC 309 or consent of instructor.

522-4 Experimental Design and Analysis. (Same as QUAN 508.) In-depth coverage of the rationale underlying the design and analysis of complex experimental designs used in psychological research. Restricted to Psychology graduate students.

523-3 Research Methods in Applied & Professional Psychology. Discussion of problems in experimental and quasi-experimental design, control and analysis that are encountered by researchers in applied and professional psychology. The course covers critical evaluation of internal, construct, and external validity

and the application of randomized and non-randomized designs for causal inference. Passive-observational and qualitative designs are covered at the instructor's discretion. Examples of current research practice from applied, counseling and clinical psychology are reviewed. Restricted to graduate status in psychology or consent of instructor.

524-4 Multivariate Methods of Psychology. Detailed treatment of multiple-factor analysis and multiple regression analysis. Also includes introduction to other multivariate methods such as discriminant analysis and cluster analysis. Prerequisite: PSYC 522. Restricted to Psychology graduate student.

525-3 Psychological Measurement. (Same as QUAN 531) Intensive coverage of such topics in test theory as item analysis, reliability, validity, problems of weighting in differential prediction, and problems in selection and classification. Prerequisite: PSYC 421 or consent of instructor.

526-3 Research in Counseling Psychology. This course provides a basic foundation of research skills. The course includes extensive reading in counseling psychology research and coverage of research design, specific research techniques, technical writing and research ethics.

527-3 Theory and Methods of Scaling. The theory of measurement, by which observed behavioral events can be translated into quantitative scales of psychological constructs. The course will cover several axiom systems that form the foundation for psychological measurement, including representation in more than one dimension. Prerequisite: PSYC 522. Restricted to graduate standing.

528-3 Decision Analysis: Techniques for Aiding Decisions. A survey of formal methods for making decisions, based on subjective probability and multiattribute utility assessments. Students will be given practice in using methods of decision analysis for solving decision problems. Special approval needed from the instructor.

529-3 Advanced Applied Multivariate Statistics. This course will introduce multivariate analyses such as structural equation modeling, hierarchical linear modeling and latent curve analysis, with additional topics addressed dependent upon student interest (e.g., missing data, categorical and/or dyadic data analysis). After presenting conceptual information on latent variable analysis, the course will focus on the application of advanced analytic techniques. Understanding of correlation and regression is essential for this course. Prerequisite: graduate level multivariate statistics course.

530-3 Theories of Counseling and Psychotherapy. A survey of the major theories of personality and systems of counseling and psychotherapy. Stresses relationship between theory and application. Special approval needed from the instructor.

531-3 to 6 Community and Institutional Field Placement. Introduction to a variety of area agencies with each student affiliating with two agencies at least two days per week. Individual and group supervision with special attention to the variety of clinically related problems and approaches to treatment encountered in the course of their activities. Required for clinical students. Restricted to psychology graduate in clinical or counseling.

532-3 Development, Personality & Psychopathology. An extensive review and systematic evaluation of theories and research pertaining to developmental processes as they influence

temperament, personality and psychopathology with emphasis on normal and disordered pathways. Restricted to graduate status or consent of instructor.

533-2 Experimental Approaches to Psychopathology. An examination of the research literature on several issues in clinical psychopathology. Restricted to psychology graduate or consent of instructor.

534-3 Cognitive and Behavior Therapy. An extensive review and systematic evaluation of clinical methods including desensitization, assertion training, cognitive restructuring, and conditioning strategies. Restricted to graduate status (clinical/counseling) or consent of instructor.

535-3 Psychopathology. Surveys the following issues and content areas in psychopathology: models and definitions of psychopathology, anxiety states, depression, schizophrenia, neurosis, behavior genetics, the mental hospital and the classification of psychopathology. This course required for all clinical students within their first two years. Restricted to psychology graduate student or consent of instructor.

536-4 Fundamentals of Counseling. An introduction to counseling psychology as a professional specialty. Professional and ethical issues in the training and work of counseling psychologists are examined. Basic counseling skills are acquired through practice interviewing. Restricted to psychology graduate student or consent of instructor.

537-3 Advanced Treatment Planning and Implementation. Presentation of systematic treatment selection approaches and formal treatment planning. A detailed survey of various empirically supported psychotherapy treatments, particularly brief therapy approaches, will be provided, with focused training in one empirically supported treatment. Students will be expected to generate formal treatment plans during the course. Restricted to psychology graduate status.

538-3 Theory and Practice of Group Facilitation. Didactic presentation of group dynamics and group counseling/therapy. Restricted to Psychology graduate status.

539-3 Experimental Approaches to Psychotherapy. A review and evaluation of empirical research related to the amelioration of maladjustment. Emphasis is on measurement and methodological problems. Prerequisite: PSYC 530 or consent of instructor.

540-4 Psychological Assessment. Basic theory, practice and research on psychological assessment with emphasis on objective, validated measures of intelligence and personality. Includes one hour laboratory section. Restricted to psychology graduate status.

541-3 Psychopathology of Childhood. An extensive review and systematic evaluation of theories and research pertaining to the behavior disorders of childhood. Emphasis will be upon empirical data and the implications of these data for the classification and treatment of these disorders. Restricted to graduate standing.

542-3 Principles and Problems in Personality Assessment. Critical review of research related to such topics as scale construction strategies, response styles, trait attribution, judgmental accuracy, and judgmental processes. Special approval needed from the instructor.

543-3 Advanced Child Assessment. Basic theory, research, and practice in the psychological assessment of children's learning

and emotional problems. Prerequisite: PSYC 540. Restricted to psychology graduate standing. Special approval needed from the instructor.

544-3 Advanced Adult Assessment. Practical experience at conceptualizing psychopathology from a standard clinical test battery and in writing clinically meaningful test reports. Prerequisite: PSYC540. Restricted to Psychology graduate standing. Special approval needed from the instructor.

545-3 Introduction to Neuropsychological Assessment. Overview of the development of neuropsychology from signs to test batteries and methodology. Prerequisite: PSYC 540. Restricted to psychology graduate status. Special approval needed from the instructor.

546-3 Human Clinical Neuropsychology. This course will familiarize students with the basic concepts, empirical foundations, and clinical applications of human clinical neuropsychology. The neurobehavioral manifestations of both acute and chronic conditions will be covered. Prerequisite: 540. Restricted to psychology graduate status. Special approval needed from the instructor.

548-3 Vocational Psychology and Career Development. Introduces students to vocational psychology as an area of academic inquiry. Topics include theories of career development, occupational information, career assessment, research issues, and career counseling techniques. Restricted to graduate standing.

549-3 Behavioral Assessment. A didactic and practicum course concerned with principles and methods of behavioral assessment including behavioral interviewing, questionnaires, self-monitoring, naturalistic and structured observation and psychophysiological assessment.

550-3 The Psychological Construction of Gender. (See WGSS 550).

552-3 Social Development. Consideration of current methods, research, and theory in developmental psychology with particular attention to social and personality development, and parent-child relations. Special approval needed from the instructor.

553-3 Cross-Cultural Psychology. Examines different topics in areas such as psychopathology, social and developmental psychology from a cross-cultural perspective. Special approval needed from the instructor.

554-3 Life-Span Developmental Psychology. Theories of human development, as well as current research trends and methodologies, will be examined from a life-span perspective.

555-3 Language and Cognition. Current theoretical problems in language and cognitive developments are investigated from the perspective of psychology, physiology, linguistics and computer simulations. Special approval needed from the instructor.

556-3 Child Psychotherapy. Survey and analysis of traditional and contemporary approaches to individual child psychotherapy. Includes psychodynamic, humanistic-nondirective, hypnotherapy-imagery and other perspectives as well as therapy outcome research. Restricted to psychology graduate status. Special approval needed from the instructor.

557-3 Family Psychotherapy. Investigation of the psychosocial interior of the family. Evolution and dynamics of interaction in families. Study of the methods of therapeutic intervention instructor.

558-3 Personality and Social Development of Adults.

A lecture-discussion course which presents the major theoretical and empirical literature in the area of adult personality and social development. Students are encouraged to apply normal developmental constructs to understand individual adults, as well as to gain competence in research methods in this area. Restricted to psychology graduate student or consent of instructor.

559-3 Behavioral Child Therapy. Survey and analysis of behavioral and cognitive-behavioral approaches to the treatment of child psychopathology. Restricted to psychology graduate status. Special approval needed from the instructor.

560-3 Couples and Marital Therapy. This course is designed to provide doctoral level psychology students the basic theoretical and technical background necessary before beginning to work in supervised marital/couples therapy clinical practice. Restricted to psychology graduate status. Special approval needed from the instructor.

561-3 Supervision of Psychotherapy. Presentation of the theories and techniques of psychotherapy supervision, as well as cultural, ethical and legal issues in supervision. Students will also provide individual supervision to beginning counselors and receive supervision of their supervision. Restricted to psychology graduates status.

562-3 Adolescent Clinical Psychology. Discusses specific characteristics of adolescent psychopathology, techniques for psychological assessment, common and empirically supported treatment approaches. Restricted to psychology graduate student or consent of instructor.

563-3 Research in Attitudes and Persuasion. Detailed review of current theory and research in social psychology of attitude formation and change and of persuasion techniques. Students will develop literature reviews and conduct original research. Restricted to graduate status in psychology or consent of instructor.

564-3 Program Evaluation: Experimental and Quasi-Experimental Approaches. Review of experimental and quasi-experimental designs for assessment of program impact. Discussion of design, logistic, and political implementation problems. Detailed examination of a number of attempts at program evaluation. Prerequisite: 500-level statistics course.

565-3 Research in Organizational Psychology. In depth examination of theoretical and research literature in organizational psychology. Topics include, but are not limited to, theory and research literature on work motivation, job attitudes, leadership, group processes, organizational stress and women and minorities in the work place. Restricted to graduate status in psychology or permission of instructor.

566-3 Health Psychology. This course will explore the interface between psychological theory and research and health issues including health behavior, prevention and intervention, stress and coping, management of chronic and terminal illness, health care service utilization, and patient/provider interaction. Graduate standing required.

567-3 Stress, Coping and Social Support. Overview of theory and research on stress, coping and social support. Emphasis is on psychosocial approaches to the stress process including life events, hassles, work stress, and family stress. Social support also is examined, both as a moderator of stress effects and as a

valuable resource in its own right.

568-3 Community Psychology. Comprehensive overview of community theory, research, and action. Topics covered include: (1) paradigmatic assumptions of the community approach to psychosocial problems; (2) basic concepts, models and issues including prevention, paraprofessionals, systems theory, social context; (3) social intervention strategies; and (4) examination of selected contemporary psychosocial problems. Restricted to psychology graduate status or consent of instructor.

569-1 to 3 Applied Research Consultants. Consulting firm which provides applied research experiences for advanced graduate students on planning, data gathering, evaluation, and decision making projects for units of university and area agencies and businesses. Students exercise decision making power in all aspects of the firm: project solicitation, fee setting, expenditures. Graded S/U only. Prerequisite: PSYC 571 or consent of instructor.

570-3 Early Cognitive Development. Surveys the major theories, methods, and data in the field of human cognitive development, with a particular emphasis on the qualitative changes that occur during infancy and early childhood. Special approval needed from the instructor.

571-6 (2,2,2) Proseminar in Applied Experimental Psychology. A survey of the problem areas to which applied experimental psychology is applicable and of the principal methods employed by applied experimental psychologists. Integration of these approaches within a comprehensive metatheory. Case studies apply the information to actual and simulated application problems. Graded S/U.

572-1 Proseminar in Brain and Cognitive Sciences. Discussions of various research topics within the brain and cognitive sciences. Presentations of current research by faculty and graduate students.

573-3 Personnel Psychology. This course will give an in-depth treatment of modern theories and practice of personnel selection. Students will learn about the psychological variables used in personnel selection as well as how to apply these findings in modern organizations. Course content will include individual difference traits related to subsequent job performance, methods used to select employees, personnel selection practices, adverse impact and other related topics. Restricted to graduate student in Psychology or instructor's permission.

574-3 The Psychology of Groups and Teams. This course examines the good, the bad and the ugly with groups and teams, with an emphasis on group dynamics and performance. Topics include: leadership, group composition and performance, group decision-making, ostracism, minority influence, groups and technology, and creativity. Restricted to graduate student in psychology or permission of instructor.

575-3 Computational Modeling. Introduction to computational modeling of cognitive processes. Covers theoretical and methodological issues in computational simulations of psychological behavior. Lectures and practical simulation assignments. Special approval needed from the instructor.

576-3 Human Engineering. Analysis of human-machine systems, human factors in the design of display and control systems, limitations and capabilities of the operator. Lecture

and research or field study. Special approval needed from the instructor.

577-3 Second Language Acquisition. (Same as LING 541) methodological issues in second language acquisition. Major developments in SLA in the areas of phonology, morphology, lexis, syntax, semantics and discourse and provides students with hands-on experience in describing and accounting for second language data. Prerequisite: Introduction to linguistics or consent of instructor.

578-3 Bilingualism. (Same as LING 543) A comprehensive introduction to the study of bilingualism. Course will examine the linguistics, psycholinguistic, sociolinguistic and educational aspects of bilingualism, particularly as pertaining to the care and education of bilingual children. Prerequisite: one previous course in linguistics or consent of instructor.

580-3 Cognition, Affect and Behavior. Provides an integrative exploration of the relations among cognition, affect and behavior (CAB). Foundations of this integration are provided, including examination of basic principles, experimental evidence, and biological bases. Emphases will be placed on learning, stability, self-regulation, and change of CAB, and relationships to individual differences, personality, psychopathology, and genetically influenced temperaments. Restricted to psychology graduate student status or instructor permission.

581 Developmental Psychopathology. An extensive review and systematic evaluation of theories and research pertaining to developmental psychopathology. Emphasis will be on empirical data and the implications of these data for the classifications and treatment of disorders. Restricted to graduate status. Special approval needed from the instructor.

585-1 to 18 Advanced Seminar. Seminars of varied content for advanced students. Special approval needed from the instructor.

586-1 Proseminar in Clinical Psychology. Required seminar for first-year graduate students enrolled in the Clinical Psychology program. Graded S/U. Restricted to psychology graduate status.

587-1 Advanced Professional Seminar in Psychology: Systems, Administration, and Advocacy. The purpose of this professional seminar is to provide students with an opportunity to consider and consolidate their various training experiences related to interdisciplinary systems, management and administration, and advocacy. These core competencies are relevant to all professional psychology work settings. Students will bring in case examples from their applied work, professional meetings, and personal reading. Learning will be facilitated via readings, case examples, and discussion. Restricted to Doctoral Student in Counseling or Clinical Psychology.

590-1 to 12 Readings in Psychology. Readings in selected topics in psychology under staff supervision. Graded S/U only. Special approval needed from the instructor.

591-3 Readings on Culture and Diversity. Readings on multicultural and diversity issues in Clinical Psychology, which may include, but not necessarily be limited to issues of racial and ethnic differences, gender, sexual orientation, socioeconomic status, religious affiliation, and disability, as they impact the assessment and treatment of psychopathology. Restricted to Classified Status, Graduate Student in Psychology. Special approval needed from the instructor.

593-1 to 24 Research in Psychology. Research under staff supervision in selected areas of psychology. Graded S/U only. Special approval needed from the instructor.

594-1 to 16 Practicum in Psychology. Practicum experience in a professional setting is offered under staff supervision in the following areas: (a) Applied experimental psychology; (b) Clinical skills. Introduction to the professional skills and issues of clinical psychology including ethics, interviewing, change processes, diversity issues. (c) Counseling psychology; (d) Teaching of psychology. (e) Clinical Psychology. Graded S/U only. Special approval needed from the instructor.

595-1 to 12 Internship. Placement in an approved setting required of all students in clinical, bioclinical, and counseling psychology. Graded S/U only. Restricted to psychology graduate students.

597-1 to 15 Preprofessional Training. Experience given in research, teaching, or clinical or counseling activities. One hour required each semester of residence. Graded S/U only. Restricted to psychology graduate student.

598-3 Ethical and Professional Problems in Psychology. The code of ethics in professional practice, in teaching and research; problems and issues of the field are discussed; and relations to other professions and the public are considered. Special approval needed from the instructor.

599-1 to 6 Thesis.

600-1 to 16 Dissertation.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded S/U or DEF only.

Public Administration

(See Political Science for program description)

Quality Engineering and Management

www.technology.siu.edu
deptoftech@engr.siu.edu

COLLEGE OF ENGINEERING

Graduate Faculty:

Chang, Feng-Chang (Roger), Associate Professor, Ph.D., Ohio State University, 1985; 1991.

Crosby, Garth, Associate Professor, Ph.D., Florida International University, 2007, 2008.

DeRuntz, Bruce, Professor, Ph.D., Southern Illinois University Carbondale, 2005; 1998.

Dunston, Julie K., Associate Professor, Ph.D., Florida State University, 1995; 1995.

Marusarz, Ronald K., Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1999.

Savage, Mandara, Associate Professor and *Chair*, Ph.D., Iowa State University, 1999; 1999.

Spezia, Carl J., Associate Professor, Ph.D., Southern Illinois University Carbondale, 2002; 2005.

Velasco, Tomas, Associate Professor, Ph.D., University of Arkansas, 1991; 1993.

Master of Science in Quality Engineering and Management

Graduate work leading to a Master of Science degree in quality engineering and management is offered by the College of Engineering. The objective of the program is to develop quality and management professionals who can plan, coordinate, design, implement, and control the quality function in manufacturing and service companies in order to increase productivity, optimize resources, decrease waste, and improve product quality. Course offerings and research are available in the areas of quality assurance, six sigma, lean manufacturing, project management and reliability. The program provides advanced education for students with baccalaureate degrees in engineering, engineering technology, technology, and also an excellent continuing education opportunity for individuals with technical degrees who wish to expand their education in the area of quality and management systems.

Admission

Candidates for this program must be accepted by the Graduate School and the Department of Technology. Candidates should possess a bachelor's degree with a major in a technical area and have a GPA of no less than 3.0/4.0. A student whose undergraduate training is deficient may be required to take additional courses to compensate for deficiencies identified by the technology graduate program committee.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for admissions to graduate study in quality engineering and management. Applicants must pay this fee by credit card.

Program Requirements

The program in the thesis option requires a minimum of 30 semester hours of acceptable graduate credit and includes 15 semester hours of quality engineering and management courses designated by the graduate advisor. Students will complete a

master's thesis, having six semester hours of thesis (QEM 599) credit.

Within the 30 semester hour requirement, students must complete the following 4 core courses:

- QEM 510-3 Quality Assurance
- QEM 525-3 Six Sigma Black Belt II
- QEM 530-3 Lean Manufacturing II
- QEM 540-3 Reliability Analysis

The remainder of the 30 semester-hours must consist of at least 15 credit hours of QEM and/or IT graduate elective courses as specified in the student's program of study. Elective courses in QEM are:

- QEM 535-3 Service Quality
- QEM 545-3 Project Management II
- QEM 550-3 Project Leadership
- QEM 555-3 Human Safety and Risk Management
- QEM 565-3 Management of Information Technology Resources
- QEM 570-3 Energy Management and Conservation

Students not meeting specific requirements for the above core courses will be required to complete the following list of courses. These specific 400-level courses will count toward meeting the 30 semester hour acceptable graduate credit requirement:

- IMAE 450-3 Project Management
- IMAE 465-3 Lean Manufacturing
- IMAE 470a-3 Six Sigma Green Belt
- IMAE 470b-3 Six Sigma Green Belt II
- IMAE 480-3 Six Sigma Black Belt

A program of study including the above required courses (15 semester hours), the master's thesis (6 semester hours), and the remaining 9 semester hours will be selected by the graduate adviser and the student.

Additional Information

Teaching or research assistantships and fellowships are available for qualified applicants. Additional information about programs, courses, assistantships, and fellowships may be obtained from the College of Engineering or from the chair of the department.

Courses (QEM)

505-3 Research Methods. The objective of this course is to familiarize the students with the methods needed in research. Emphasis is placed on how these methods can be applied in the quality engineering & management area. Topics include development of research proposals, use of statistics in the analysis and communication of the results. Restricted to enrollment in quality engineering and management program or consent of instructor.

510-3 Quality Assurance. Study of recent advances in quality planning, quality measurement, design assurance, process control, participatory management, supplier quality, customer relations and improvement concepts. Prerequisite: IMAE 470A and IMAE 470B.

525-3 Six Sigma Black Belt II. The purpose of this course is to provide the student with knowledge of the most advance areas of the Six Sigma black belt training. Advanced fractional factorial experiments, response surface methodology, robust

design and process, design for Six Sigma and other advance Six Sigma principles and techniques are covered in this course. Prerequisite: IMAE 470A, 470B, and 480.

530-3 Lean Manufacturing II. This course will cover the principles and techniques of lean manufacturing. Major topics covered include value stream mapping, pull systems/Kanbans, continuous improvement/Kaizen, lean six sigma, lean simulation, and other modern lean manufacturing techniques and issues. Prerequisite: IMAE 465.

535-3 Service Quality. This course examines how organizational leadership, strategic development and deployment of service management systems are used to achieve service quality. Key service quality management concepts of customer and market focus, employee focus, communication, and service delivery will be taught through the use of case studies, article reviews and team projects.

540-3 Reliability Analysis. The objective of this course is to provide the student with an overview of the basic techniques applied in the field of reliability and failure data analysis in a manufacturing environment. Prerequisite: IMAE 470B.

545-3 Project Management II. This course is an advanced study of the concepts in project management, building on the fundamentals established in prerequisite courses. Using MS Project, students will work individually and in teams to develop appropriate tools and documentation typically utilized to implement, control, and closeout projects. Computerized scheduling and cost control, quality systems, risks management, procurement, and project termination. Prerequisite: IMAE 450, or instructor consent.

546-3 Project Management for Supply Chain Engineering. This course is designed to provide students with an introduction to the project management process and an in-depth examination of the activities needed to successfully initiate, plan, schedule, and control the time and cost factors of the project as it relates to developing a supply chain system. Executing successful supply chain projects requires the management of technology, people, culture, stakeholders, and other diverse elements. This course takes an integrated approach to managing projects, merging both technical and managerial challenges. It emphasizes not only individual project execution, but also provides a strategic perspective, demonstrating means to manage supply chain projects at the program and portfolio levels.

550-3 Project Leadership. This course is designed to develop a graduate student's human relationship skills for leading project teams. Through the use of case studies and practical applications, students will learn effective leadership, team development, motivational and organizational planning, and conflict resolution practices.

555-3 Human Safety and Risk Management. Understanding risk and safety issues inevitably involves many disciplines, as does their effective management. Through the combination of scientific evidence, practical examples, and case studies presented in this course, students will be equipped to identify, assess and develop strategies to mitigate occupational and environmental risk. Methods are used to effectively communicate and understand risk factors as presented by various agencies.

560-3 Supply Chain Engineering. The objective of this course is to introduce the basic principles and techniques of the Lean

methodologies and its application targeting specific needs of the Supply Chain professionals in executive sales and operations planning, forecasting, customer relationships, leveling production, dependent demand materials management, capacity management, shop floor control, inventory management, lot sizing, warehousing, logistics, quality control, and purchasing.

562-3 Transportation and Logistics Systems. The course covers different components of logistics and distribution; in particular, those dealing with material movement, associated moveable and immovable facilities/resources, procurement and material refurbishing, warehousing and distribution network systems, and transportation. The major thrust of the course is to explore the optimal planning, design and coordination of large scale warehousing operations and distribution logistics, supply transportation systems (shipping and materials tracking), multi-modal transportation systems and convoy movements.

564-3 Facilities and Location Planning. The course encompasses the panning, design, development, management and control of production and distribution systems to effectively distribute goods and services from the producer to end user, whether in manufacturing or service systems. Topics include analytical approaches in site location, facility layout, material handling, and storage systems. Aspects of facilities for manufacturing, material handling, packing and distribution, concepts of group technology, and computer aided facility design are covered.

565-3 Management of Information Technology Resources. The use of information and communication technologies (ICT) dominates the world of business. There are ongoing fundamental changes in the way organizations execute their business processes and interact with each other. This course helps students understand the relationship between information systems and business performance. This will enable students to appreciate the importance of strategic implementation and proper manage of ICT resources.

570-3 Energy Management and Conservation. This course covers the principles and policies of energy management and auditing. It covers development, implementation and economic analysis, using simple pay back and life-cycle cost models, of these programs and audits. It focuses on efficient operation of electric motors, lighting, boilers, furnaces, and facilities climate control. It surveys current energy policy with emphasis on LEED design and certification. Prerequisites: MATH 150 or IMAE 307, PHYS 203A,B or equivalents.

580-1 to 4 Seminar. Collective and individual study of issues and problems related to quality engineering and management. Graded S/U. Restricted to enrollment in the M.S. degree in quality engineering and management.

583-3 Analysis of Statistical Quality Data. Controlling and improving quality has become an important business strategy for many organizations: manufacturers, distributors, transportation companies, financial services organizations, health care providers, and government agencies. Maintaining a high level of product or service quality provides a competitive advantage. A business that can delight customers by improving and controlling quality can dominate its competitors. This course covers the technical methods for achieving success in quality control and improvement, and offers guidance on how to successfully implement these methods.

585-3 Advanced Data Analysis & Design of Experiments.

Experimentation plays an important role in product development and process realization and commercialization activities, which consist of new product design and formulation, manufacturing process development, and process improvement. The objective in many cases may be to develop a robust process, a process affected minimally by external sources of variability. The purpose of this course is to provide the student with a comprehensive coverage of the knowledge areas involved in these studies, focusing on Planning, Designing and Analyzing Experiments (DoE).

592-1 to 4 Special Investigations in Quality Engineering and Management. Advanced topics in quality engineering and management. Topics are selected by mutual agreement of the student and the instructor. Special approval needed from the adviser.

599-1 to 6 Thesis.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Quantitative Methods

<http://ehs.siu.edu/epse>

COLLEGE OF EDUCATION AND HUMAN SERVICES

Graduate Faculty:

Elmore, Patricia B., Professor, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1970; 1967.

Headrick, Todd Christopher, Professor, Ph.D., Wayne State University, 1997; 1999.

Koran, Jennifer, Assistant Professor, Ph.D., University of Maryland, 2009; 2009.

Kowalchuk, Rhonda K., Associate Professor, Ph.D., University of Manitoba, 2000; 2004.

Leitner, Dennis W., Associate Professor, *Emeritus*, Ph.D., University of Maryland, 1975; 1974.

Lewis, Ernest, Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1971; 1970.

Sheng, Yanyan, Associate Professor, Ph.D., University of Missouri - Columbia, 2005; 2005.

Doctor of Philosophy Degree in Education

The Department of Counseling, Quantitative Methods, and Special Education offers graduate studies leading to the Ph.D. degree majoring in Education with a concentration in Quantitative Methods. The purposes of this graduate program are to prepare professional quantitative methodologists to pursue careers or research in their areas of interest.

Individualized courses of study are linked to the teaching and research capabilities of the faculty. Sufficient latitude is provided so that students in concert with their advisor and committee plan programs that capitalize on student interests and faculty capabilities.

Application. Students must apply to the Department of Counseling, Quantitative Methods, and Special Education, Southern Illinois University, Mail Code 4618, Carbondale IL 62901. Phone: 618-536-7763. Specific questions about the major in Education or the concentration in Qualitative Methods and how to apply should be directed to the address identified above or by phone.

A non-refundable application fee of \$65.00 must be submitted with the application. Applicants must pay this fee with a credit card.

Admission and Retention. Applications are reviewed by the Quantitative Methods faculty and recommendations forwarded to the College of Education and Human Services and the Graduate School. Test scores from the Graduate Record Examination are required. A personal interview with a candidate is required. Admission to the program is dependent on (1) the applicant's grades in their master's program, (2) GRE scores, (3) prior course work, and (4) availability of qualified faculty to supervise the applicant's doctoral work. Applicants must also meet other admission requirements of the program. The performance of each doctoral candidate is reviewed each semester. Maintenance of a grade point average of 3.0 and compliance with policies of the department, college, and Graduate School are also required.

Core Requirements. Specific courses or other degree requirements

are determined by the program upon recommendation from the student's doctoral committee.

Research and Teaching. Each student is required to demonstrate professional competence through supervised experiences. These experiences include research, teaching, and personal interactions in consulting or assessment situations.

Preliminary Examinations. All Ph.D. candidates must pass a preliminary examination over their doctoral course work before formal admission to candidacy. The doctoral committee with the concurrence of the program is responsible for the development and evaluation of the preliminary examination.

Doctoral Committees. Students are assigned a doctoral advisor upon admission to the program. Before the end of the first year of doctoral study each student and his/her advisor should discuss prospective doctoral committee chairpersons based on the student's research interests. Each doctoral student works with his/her doctoral committee to develop and approve a rigorous program of study. The committee is also responsible for an oral examination over the completed dissertation and student's general knowledge of the professional field.

Courses (QUAN)

Courses in this program may require the purchase of supplemental materials.

402-3 Basic Statistics. A master's level terminal statistics course. Emphasis on descriptive statistics and graphical representation of data. Includes a brief introduction to hypothesis testing procedure.

506-4 Inferential Statistics. Covers basic descriptive techniques such as central tendency, measures of variability and graphical presentation of data. In addition, hypothesis testing, analysis of variance, nonparametrics and simple linear prediction will be covered.

507-4 Multiple Regression. The general linear model is presented which allows for hypothesis testing including correlational analysis, analysis of variance and analysis of covariance. Non-linear relationships are presented. Emphasis is placed on testing the stated research hypotheses. Prerequisite: QUAN 506.

508-4 Experimental Design in Educational Research. (Same as PSYC 522.) Strategies of designing research studies and the analysis of data from studies using linear models are examined. Emphasis will be placed on internal and external validity and factors that affect power in variance designs including completely randomized designs, Latin square, repeated measures and analysis of covariance with each of the above designs. Prerequisite: QUAN 506 or equivalent.

531-3 Principles of Measurement. (Same as PSYC 525). Intended to provide theoretical principles of measurement which are applicable to both teaching and research. Part of the course will be devoted to current issues in measurement and to practical applications to these theoretical principles. Prerequisite: QUAN 506.

533-3 Survey Research Methods. Overview of survey methods covering topics such as the purpose of survey research methods, the process of survey research, ethical considerations in survey research, questionnaire design and administration, sampling

designs, data processing, and reporting of survey research. Students are expected to be familiar with basic descriptive statistics, inferential statistical procedures and principles of instrument construction/development. Prerequisite: QUAN 506 & QUAN 531 or equivalent.

580-2 to 29 (3,3,3,3,2,3,3,2 to 6) Doctoral Seminar in Quantitative Methods. A series of advanced seminars on statistics and measurement. Sections a through h may be taken only once each. Section i may be repeated as topics vary. (a) Advanced regression analysis. (b) Factor analysis. (c) Multivariate methods. (d) Nonparametric methods. (e) Evaluation methods. (f) Experimental design. (g) Advanced measurement theory. (h) Computer applications. (i) Selected topics. Prerequisite: QUAN 507.

592-1 to 8 (1 to 6 per semester) Independent Study and Investigation. For advanced graduate students. Topics of interest to the individual student are studied under supervision of a program staff member. Special approval needed from the program.

593-1 to 4 Individual Research. For advanced graduate students in Quantitative Methods. Formulating, investigating and reporting of research problems in the area of Quantitative Methods. Special approval needed from the program.

600-1 to 32 (1 to 16 per semester) Dissertation.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded S/U or DEF only.

Radio, Television, and Digital Media

(See Mass Communication and Media Arts for program description)

Radiologic Sciences

COLLEGE OF APPLIED SCIENCES AND ARTS

Graduate Faculty:

Collins, Kevin Scott, Professor, Ph.D., Southern Illinois University Carbondale, 2011. Radiation therapy.

Collins, Sandra K., Associate Professor, Ph.D., Southern Illinois University Carbondale, 2003; 2000. Health care management.

Hirsch, Bradon, Lecturer, M.S., Southern Illinois University Carbondale, 2013. .

McKinnies, Richard, Associate Professor, M.S., Southern Illinois University Carbondale, 2000, 2003.

Mobile, Katherine, Lecturer, M.S., University of Wisconsin-LaCrosse, 2011.

The Radiologic Science professional is a member of the health care team who has knowledge of the characteristics and clinical relevance of radiographic imaging, is cognizant of patient care procedures and has the education and expertise necessary to generate diagnostic medical images including sonograms, computed tomograms, magnetic resonance images, and roentgenograms. The mission of the Master of Science in Radiologic Sciences program through Southern Illinois University (SIU) is to provide a quality program integrating education, research, and service in order to meet the needs of the profession and improve health care of the people and communities we serve.

Several specific objectives and goals of the program would be to:

- Prepare the student to practice as a radiologic sciences educator or manager by offering a balanced curriculum and quality didactic/experiential instruction.
- Provide didactic and experiential opportunities that lead to research in educational, professional, or health care issues relating to radiologic sciences education and/or management.
- Provide avenues to students for development and growth within the profession.
- Provide avenues for students to develop and apply skills in effective communication, analytical and critical thinking, and problem solving necessary for successful allied health practice.
- Provide an experiential and didactic environment which leads to the refinement of skills and competence appropriate for an advanced educator/manager in the radiologic sciences.
- Provide an accessible opportunity for regional radiologic science professionals to acquire a terminal degree.
- Provide an accessible opportunity for regional radiologic sciences professionals to acquire the necessary means to succeed in a global and diverse workforce/workplace.

The minimum admission guidelines of the MSRS program mirror those of the Graduate School at SIU; however, to elaborate on those requirements, the following is provided:

- Candidates will be granted admittance to the SIUC

Graduate School.

- Candidates will possess a baccalaureate degree and have completed a program of study in an associated field to Allied Health, Radiology, Sonography, Medical Imaging, Health Care Management, or an equivalent field.
- Candidates will be nationally licensed by the ARRT, the ARDMS, the NMDCB, or an equivalent National or International Licensing Body in diagnostic imaging.
- Candidates will have a minimum cumulative grade point average (GPA) of at least 2.7 (where 4.0 = A).
- Student background checks will only be completed if required in the legal agreement to perform the internship.
- The GRE is not required for admission to this program.
- TOEFL score requirements will follow the requirements set forth by the SIUC Graduate School.
- Transfer students will follow the same criteria as all other students.
- Students will complete and submit an application for enrollment in the MSRS program and submit a \$65 application fee to the program.

The MSRS program is a comprehensive program that will prepare students to enter the professional workforce with a graduate degree in radiology, specializing in either management or education. The academic objectives of the program include:

1. Successful completion of 30 didactic credit hours (RAD 511, 516, 521, 526, 531, 536, 541, 546, 551, and 556) plus objective 2 or 3;
2. Successful completion of RAD 593 which consists of 6 credit hours of research/thesis project, culminating in a final scholarly work as outlined by the SIUC Graduate School;
3. Successful completion of a RAD 595 which consists of a 6 credit hour (240 contact hours) internship in either education or management, dependent upon the students' area of interest. (The internship is an option if obtaining state licensure/permission to perform the internship is feasible.)

To facilitate completion of the objectives of the program, the course of instruction will consist of 36 semester hours. As part of these 36 semester hours, students will complete an internship or research/thesis project. The student internship will specialize in instructional or management techniques in a real-world setting consisting of 6 credit hours (where 1 credit hour is equivalent to 40 contact hours).

The curriculum will consist of both didactic and experiential courses. Experiential learning will take place through the use of internships and student teaching at SIUC or other state/regional basic radiography programs or health care facilities. Course material will cover educational theory (including the foundations of education) and/or management theory. Additionally, advanced study of radiologic sciences coursework including radiation physics, radiation biology, anatomy, pharmacology, human disease/pathology, advanced imaging methods, advanced imaging modalities, and patient care will be undertaken for individuals choosing education as their area of specialization. Upon program completion, the student is expected to be fully capable of teaching these topics at an

introductory level for basic radiologic science professionals. Special project assignments, conference attendance and presentations, and journal article reviews are an integral part of the curriculum.

All students graduating from the MSRS program will be required to meet the qualifications of the graduate school at SIUC. Students will be required to complete a culminating scholarly work which may include a research/thesis paper, or graduate project if not completing the internship option.

Sample Schedule of Course Offerings

Master of Science in Radiologic Sciences (MSRS)

36 semesters hours are required for successful completion of this program.

Fall Semester

- RAD 511-3 Fundamentals of Health Care Systems
- RAD 516-3 Cultural Foundations and Theories of Education
- RAD 521-3 Advance Practice of Radiologic/Imaging Sciences I
- RAD 526-3 Seminar in Radiologic/Imaging Sciences I

Spring Semester

- RAD 531-3 Human Resource Management in Health Care
- RAD 536-3 Administration and Supervision in Allied Health
- RAD 541-3 Advance Practice of Radiologic/Imaging Sciences II
- RAD 546-3 Seminar in Radiologic/Imaging Sciences II

Summer Semester

- RAD 551-3 Legal and Ethical Fundamentals of Health Care
- RAD 556-3 Advanced Research Methods
- RAD 601-1 per semester Continuing Enrollment

Final Portion of Program - Must complete one of the following.

- RAD 593-6 Individual Research
- RAD 595-6 Graduate Internship

The delivery method will be through distance education via Desire2Learn or the current classroom management system in use at SIU.

Courses (RAD)

511-3 Fundamentals of Health Care Systems. This course provides a multi-disciplinary analysis and is designed to provide students with information pertaining to the issues surrounding access to care, medical technology, and the complex financial structures of the health care system. Students will extensively examine aspects of the complex healthcare system such as managed care, Medicare, Medicaid, pharmaceuticals, health promotion and disease prevention, and the quality of care.

516-3 Cultural Foundations and Theories of Education. Seminar provides an examination of the historical, social, economic and psychological foundations of allied health education with emphasis given to the nature and role of education and training in preparing for the field of medical education. The objectives of this seminar will allow the student to explore the nature and theories of education, the behavioral aspects of education including the assumptions and practices which underlie education. Special approval needed from the instructor

521-3 Advance Practice of Radiologic/Imaging Sciences I. This course will include a review of the following topics: Radiation physics, radiation biology, anatomy, pharmacology, human diseases/pathology, advanced imaging methods, advanced imaging modalities, and patient care.

526-3 Seminar in Radiologic/Imaging Sciences I. (Same as RAD 525) This course consists of various seminar/literature reviews associated with radiologic/imaging sciences. Topics include imaging techniques, technological advances in the radiologic/imaging sciences, patient care trends, and the role of an imaging professional. This course is twenty weeks in length.

531-3 Human Resources in Health Care. Describes the key human resource functions that play a significant role in the healthcare environment and focuses specifically on how those functions support management initiatives and accreditation and/or regulatory compliance. Extensive review of how the failure to systematically apply effective human resource strategies can result in organizational demise is conducted. Conduct a human resource audit. Explores the dynamic legal and regulatory environment and carefully examines how legislative changes influence the healthcare organization overall focusing particularly on those functions that are linked to patient satisfaction and balanced scorecards and/or benchmarking of provider performance.

536-3 Administration and Supervision in Allied Health. This course provides students with an examination of the nature, function, and techniques of administration and supervision in medical departments. This is accomplished through case analyses and practice simulations of human problems in the healthcare organization and application of findings of behavioral science research to healthcare problems. Emphasis will be placed on the development of direction and leadership skills.

541-3 Advance Practice of Radiologic/Imaging Sciences II. This course will continue to cover the same topics that were reviewed in RAD 521 but to a greater level of understanding. Topics include: Radiation physics, radiation biology, anatomy, pharmacology, human disease/pathology, advanced imaging methods, advanced imaging modalities, and patient care. Prerequisite: A grade of "C" or better in RAD 521.

546-3 Seminar in Radiologic/Imaging Sciences II. (Same as RAD 545) This course consists of various seminar/literature reviews associated with radiologic/imaging sciences. Topics include imaging techniques, technological advances in the radiologic/imaging sciences, patient care trends, and the role of an imaging professional. This course is twenty weeks in length. Prerequisite: A grade of "C" or better in RAD 526.

551-3 Legal and Ethical Fundamentals of Health Care. This course provides students with an analysis of the legal and ethical environment of the healthcare industry. Focused on the healthcare environment, the course examines the judicial process pertaining to torts, contracts, antitrust, corporate compliance, access to care, negligence, and professional liability. The nature of ethics in the multi-cultural healthcare environment is examined with an analysis of the moral issues in healthcare. Restricted to Medical Dosimetry students.

556-3 Advanced Research Methods. This course will introduce the student to various mechanisms by which graduate level scholarly and professional research are conducted. Utilizing available resources, the student will commence in the production of an original piece of scholarly research as a requirement for

this course.

565-1 to 6 Independent Study. Directed independent study in selected areas of medical dosimetry studies. Special approval needed from the Program Director.

593-6 Individual Research. A research course leading to the completion of a research paper that demonstrates the student's knowledge of research techniques. Research is based on the selection and investigation of a research topic culminating in a paper satisfying the research requirements for the Master of Science in Radiologic Sciences degree and is in accordance with the policies and guidelines as established by the Southern Illinois University Carbondale's (SIUC) Graduate School. Prerequisite: RAD 556. Restricted to RADS majors or consent of Program Director.

595-6 Graduate Internship. This course is designed to give real-world experience to future radiologic technology educators or managers by exposing the student to common issues which may arise in their area of specialization including: classroom management, instructional skills, instructional assessment, lesson planning and development, direct teaching experience, human resource management, budgeting, medical legal issues in radiology, ethics and law. One credit hour equals 40 contact hours. Special approval: Consent of Program Director and will be subject to the feasibility of meeting state licensure requirements.

601-1 Continuing Enrollment. This course is required to satisfy the Graduate School's requirement of continuous enrollment and is intended for those students who are enrolled in the program but cannot take a core academic course during a given semester. Prerequisite: Consent of Program Director.

Recreation

<http://ehs.siu.edu/her/graduate/recreation/index.php>

COLLEGE OF EDUCATION AND HUMAN SERVICES

Graduate Faculty:

Colson, Tina, Senior Lecturer, MS, Southern Illinois University Carbondale, 2004; 2005.

Glover, James M., Associate Professor, *Emeritus*, Ph.D., University of Maryland, 1980; 1984.

Glover, Regina B., Associate Professor, *Emerita*, Ph.D., University of Maryland, 1983; 1983.

Kim, Jun, Assistant Professor, Ph.D., University of Utah, 2013; 2015.

Malkin, Marjorie J., Professor, Ed.D., *Emerita*, University of Georgia, 1986; 1989.

McEwen, Douglas N., Professor, *Emeritus*, Ph.D., Michigan State University, 1973; 1975.

Sheehan, Clayton, Instructor, MS, Southern Illinois University Carbondale, 2015; 2015.

Weeks, Steven E., Senior Lecturer, Ph.D., Southern Illinois University Carbondale, 2003; 2003.

Yang, Heewon, Professor, Ph.D., Indiana University, 2002; 2004. Therapeutic recreation intervention programs.

The Recreation program in the Department of Health Education and Recreation offers a broad interdisciplinary program of studies preparing students for administrative careers in recreation management or therapeutic recreation. The program leads to the Master of Science in Education degree with a major in recreation. This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Recreation. Applicants can pay this fee by credit card when applying electronically.

Master of Science in Education Degree

Graduate work in recreation stresses administration and research and is open to highly qualified students with a minimum 3.0 grade point average. All students must be admitted to the Graduate School in good standing.

Graduate students in recreation must complete a minimum of 36 semester hours including a theory core and a research core. The research core is completed by fulfilling requirements for the thesis, the non-paper, or the internship options.

The **thesis option** requires 3 semester hours of research methods, 6 semester hours of thesis, and 3 or 4 semester hours of statistics. After completing the required research methods course, each student should select a chairperson for the thesis committee. A minimum of two additional graduate faculty members, one holding rank outside the faculty of recreation, is needed to form the full committee. After approval of a thesis topic, the student will conduct a research effort under the committee's guidance, followed by an oral examination.

The **non-paper option** requires 3 semester hours of research methods, 3 semester hours of project in recreation, and 3 or 4 semester hours of statistics. The research project or paper may be field-based or applied and will be supervised by an academic adviser who is a graduate faculty member in recreation. The research project or paper must be approved by one additional

graduate faculty member.

The **internship option** requires 3 semester hours of research methods, 3 or 4 semester hours of statistics, and 6 semester hours of supervised field work. The field work must be completed under the supervision of a professional working in the student's area of professional interest and must be overseen by an academic advisor who is a graduate faculty member in recreation.

In addition to the completion of the theory and research core in either the thesis or non-paper option, the student will select an additional 13-14 emphasis and elective hours. Students completing QUAN 506-4 will take a total of 13 credit hours of emphasis and electives, and students completing QUAN 402-3 will take a total of 14 credit hours of emphasis and electives. By utilizing electives, the student can focus on a specific option or emphasis. This emphasis may include recreation administration, focusing on skills necessary for management in the commercial and public sector including local, state, and federal recreation programs; outdoor recreation leadership and management which focuses on skills necessary to manage or administer programs, facilities and lands for a variety of outdoor recreation providers and organizations (this emphasis could lead to certifications); or therapeutic recreation which focuses on skills necessary in the management of therapeutic recreation (recreational therapy) programs in a variety of health care and human service organizations (this emphasis could lead to certification). Variations of these include campus recreation management, expedition leadership and facility management.

All students must maintain a minimum 3.0 (4.0 point scale) grade point average and earn a C or better in Theory and Research Core classes to be eligible to graduate.

Master's Degree in Recreation

Theory Core

REC 500-3 Modern Concepts of Leisure

REC 508-3 Trends and Global Issues in Leisure Services

Research Core

REC 550-3 Research in Recreation

QUAN 506-4 Inferential Statistics or QUAN 402-3 Basic Statistics

Thesis (Option 1)

REC 599-3 Thesis

Non-Paper (Option 2)

REC 575-3 Project in Recreation

Internship (Option 3)

REC 596 Field Work (6 hours)

Certificate in Gerontology

The Department of Health Education and Recreation participates in the Certificate in Gerontology interdisciplinary program and offers classes, HED 440 Health Issues in Aging, REC 440 Therapeutic Recreation for the Aged, which are Certificate requirements. For more information on the Certificate program, please see the section on Certificate Programs in Chapter One.

Courses (REC)

Courses in this major may require the purchase of supplemental materials. Field trips are required for certain courses.

401-3 Fundamentals of Environmental Education. (Same as AGRI 401 and FOR 401) An experiential course designed to help students interested in conservation education understand and apply teaching principles for both inside and outside the classroom. The class includes certification in a nationally recognized environmental education program, and is suitable for students in natural resource, agriculture, recreation and education fields. Requires field trip transportation fee and supplemental expenditures not to exceed \$25 per course registration. Offered alternate (odd) years.

404-3 Principles and Practices of Therapeutic Recreation. An introductory course for therapeutic recreation (TR) students. Concepts, history, and growth of TR as a healthcare profession, theories, treatment approaches to TR, an overview of the APIE process, and other professional issues will be introduced.

423-3 Environmental Interpretation. (Same as AGRI 423 and FOR 423) Principles and techniques of natural and cultural interpretation. Two hours lecture, three hours laboratory. Prerequisite: ten hours biological science or ten hours of recreation. Requires field trip transportation fee not to exceed \$40 per course registration.

425-3 Planning and Design of Recreational Facilities. An examination of major design considerations for a variety of recreation facilities such as recreation centers, recreation sport complexes, parks, visitors centers, and natatoriums. Special attention will be given to long range facility planning. Prerequisite: REC 300, REC 301, REC 303. Restricted to senior or graduate standing.

426-3 Outdoor Adventure Land Based Pursuits. This course provides a combination of theoretical background and technical aspects of outdoor adventure based pursuits in a vertical environment and will emphasize hands-on skill development such as movement on rock, rope systems, anchors, rappelling and belaying, protection placement, and lead climbing philosophy. Taught biennially. Course fee and field trips required. Fee: \$100.

427-3 Outdoor Adventure Water Based Pursuits. This course provides a combination of theoretical background and technical aspects of outdoor adventure based pursuits in a water environment and will emphasize hands-on skill development such as equipment nomenclature, strokes, rescues, and reading/recognizing water features. Taught biennially. Course fee and field trips required. Fee: \$100.

428-3 Outdoor Adventure Challenge Based Pursuits. This course provides a combination of theoretical background and technical aspects of outdoor adventure based pursuits in a challenge environment and will emphasize hands-on skill development-spotting/belaying, equipment management, program design/sequencing, facilitation strategies, and course design and maintenance. Taught biennially. Course fee and field trips required. Fee: \$100.

429-3 Planning, Logistics, & Risk Management in Outdoor Recreation. This course provides an experiential approach in addressing the planning, logistics, and safety and risk management needed to design, implement, and prepare outdoor adventure based expeditions. Fulfills portions of the Wilderness

Education Association's Planning and Logistics/Safety and Risk Management core competencies. Taught Biennially.

430-3 Outdoor Living Skills. This course provides a foundation to basic outdoor living skills in backcountry environments. Topics include basic camping skills, equipment and clothing selection and use, weather, health and sanitation, travel techniques, navigation, and decision making/problem solving. Fulfills the Wilderness Education Association's Outdoor Living core competency. Taught Biennially. Course fees and field trips required. Trip fee not to exceed \$350. REC 429 recommended before taking REC 430.

431-3 Expedition Leadership. This course focuses on professional leadership of highly adventurous wilderness trips. Emphasis is on development of leadership through sound judgment, decision-making, and teaching in a backcountry/wilderness environment on an extended expedition. Fulfills the Wilderness Education Association's Education and Leadership core competency. Taught biennially. Course fee and field trips required. Trip fees not to exceed \$750. REC 429 & REC 430 recommended before taking REC 431.

432-3 Environmental Issues and Ethics in Outdoor Recreation. This course will address the management and issues related to outdoor recreation and the importance of developing a land ethic that will ensure future use of outdoor resources. The history, background, and development of the recreation ecology movement will be addressed. Fulfills the WEA's Environmental Integration core competency and LNT's Master Educator curriculum. Taught Biennially. Course fee and field trip required. Fee: \$35.

433-3 Adventure Education. This course provides a practical and theoretical background of adventure education. Topics that will be addressed and applied include the use of challenge and adventure in various situations, experiential education, activity sequencing, utilizing peak experiences, leadership styles and development, debriefing, and framing. Taught Biennially. Field trips required.

434-3 Wilderness First Responder. This course addresses the practice of advanced medical techniques in a wilderness environment. The Wilderness First Responder is recognized as the industry standard for those who work in the backcountry or remote environments. Wilderness First Responder certification offered with successful completion. Course fee and field trips required. Fee: \$30.

435-3 Advanced Outdoor Leadership. This course focuses on advanced leadership techniques for outdoor leaders. Emphasis is on evaluation and assessment of leaders in backcountry/wilderness environments. Utilizes the Wilderness Education Association's assessment and evaluation curriculum. Field trip required. Special approval needed from the instructor.

440-15 (3,3,3,3,3) Therapeutic Recreation for Specific Populations. Students will examine problems and characteristics of individuals with various disabilities. Emphasis is upon the role of therapeutic recreation with these specific populations in institutional and community settings: (a) therapeutic recreation for individuals with psychological disorders, (b) therapeutic recreation for individuals with developmental disabilities, (c) (same as GRON 440c) therapeutic recreation for the aged, (d) therapeutic recreation for those in the criminal justice system, (e) therapeutic recreation for individuals with

physical disabilities and **(f)** therapeutic recreation in substance abuse treatment. Prerequisite: 300, 301, 302, 304 or consent.

445-3 Outdoor Recreation Management. This course addresses the philosophies and principles underlying the growth and development of outdoor recreation management. Outdoor recreation is examined in terms of historical values, long range planning, site design, visitor needs, and environment impact. Course fee and field trip required. A fee of up to \$14 may be required.

446-3 Backcountry and Wilderness Trail Stewardship. This course provides a hands-on approach to aspects of volunteer trail stewardship in planning, implementing, and evaluating basic and advanced trail features and building projects. Rules, regulations, and potential hazards associated with working, traveling, and camping in the backcountry will be addressed. Students will be exposed to trail building tools and proper usage and care. Field trips required. Special approval needed from the instructor.

460-3 Therapeutic Recreation Management. Management of therapeutic recreation programs in healthcare systems and other related human service areas. This course will cover a variety of issues such as U.S. healthcare systems and settings, organizational planning, financial and personnel management legal foundations, and advocacy and advancement of therapeutic recreation profession. Prerequisite: REC 300, REC 301, REC 302, REC 303, REC 304 or consent of department.

461-3 Program Design and Evaluation in Therapeutic Recreation. To equip the student with skills necessary to systematically design and evaluate programs. Philosophy and nature of systems, system analysis, assessment, individual treatment planning, implementation and evaluation of treatment programs. Prerequisite: REC 300, REC 301, REC 302, REC 303, REC 304, one section of REC 440, or consent of department.

462-3 Facilitation Techniques in Therapeutic Recreation. This course is designed to provide an understanding of the basic processes and techniques of therapeutic recreation and to develop technical competencies necessary for the provision of quality therapeutic recreation services. Emphasis is on the skillful application of various processes and techniques to facilitate therapeutic changes in the client and the client's environment. Prerequisite: REC 304 or concurrent enrollment.

465-3 Advanced Administrative Techniques in Recreation. Designed to examine current administrative topics in recreation such as practices and trends in budget and finance, legal aspects, grant writing, personnel and policies and others.

475-3 to 39 Recreation Workshop. Critical examination and analysis of innovative programs and practices in one of the following areas: **(a)** Budget and Finance, **(b)** Campus Recreation Services, **(c)** Commercial, **(d)** Maintenance of Areas and Facilities, **(e)** Outdoor Recreation. Field trip fee: \$100 **(f)** Personnel, **(g)** Technological Advances, **(h)** Therapeutic Recreation–Aging, **(i)** Therapeutic Recreation–Developmental Disability, **(j)** Therapeutic Recreation–Emotional Illness, **(k)** Therapeutic Recreation–Physical Disability, **(l)** Therapeutic Recreation–Prisons and Detention Centers, **(m)** Tourism.

485-2 to 12 Practicum in Outdoor Education. A supervised experience in a professional setting. Emphasis on administrative, supervisory, teaching and program leadership in outdoor,

conservation, or environmental education setting. Costs for travel are the responsibility of the student. Special approval needed from the instructor.

500-3 Modern Concepts of Leisure. This course explores the meaning of leisure, recreation, and play from a philosophical and psychological perspective. The historical and contemporary relationships among work, time, lifestyles and leisure are analyzed. In addition, the course attempts to develop students' viewpoints toward these topics in order that they formulate a philosophy of leisure. Required of all majors.

501-3 Personnel in Leisure Services. This course will examine administrative issues regarding personnel in leisure delivery systems. Topics include: leadership theory, selection and training, legislation, collective bargaining, motivation, performance appraisal, power and gender.

502-3 Revenue Production for Leisure Service Organizations. An integrative view of revenue production for leisure service organizations. Numerous practices of generating income, such as fees and charges, facility rental, bonds, investments and public/private cooperative development will be examined in relationship to their ability to aid an organization in achieving its stated objectives.

503-3 Managing and Marketing Leisure Services. An examination of the critical functions of a manager in public and private leisure service organizations. Particular topics include goal and policy development, ethics, risk management, fiscal management and facility operations. Special attention is given to the leisure service managers role in marketing recreation.

508-3 Trends and Global Issues in Leisure Services. This course will study the various issues and trends that affect leisure delivery systems. This course will be the culminating seminar for graduate students in Recreation. Prerequisite: REC 500, REC 501, REC 502, REC 550.

524-3 Professional Skills in Therapeutic Recreation. This course focuses on professional skills necessary at the administrative and supervisory level. Program and staff development, conference presentations, and in service training, grantsmanship, article writing, budgeting, consultation and public relations comprise the core of the course. Prerequisite: REC 304, REC 460 or consent of department.

525-3 Recreation for Special Populations. Planning, organizing, selecting, evaluating, and adapting activities to a variety of institutional and community settings. Prerequisite: REC 500 or consent of department.

526-3 Seminar in Current Issues in Therapeutic Recreation. This course focuses on current issues in therapeutic recreation services including credentialing, accreditation, professional associations, legislation, research and other relevant issues. Prerequisite: REC 304 or consent of department.

550-3 Research in Recreation. This course focuses on research concepts and methods (quantitative and qualitative). Students will complete a critical analysis of significant research in recreation or therapeutic recreation, and will develop a tentative research proposal. Prerequisite: REC 500.

560-9 (3 per topic) Seminar in Recreation. Major issues, trends, and cultural, economic and social significance in **(a)** Park and community, **(b)** Therapeutic recreation and individuals with disabilities, and **(c)** Commercial recreation. Prerequisite: REC 500 or consent of department.

565-3 Environmental Issues in Outdoor Recreation. Seminar in environmental issues and problems that affect outdoor recreation. Content includes history of the environmental movement in relation to outdoor recreation and specific problems affecting recreation on national parks, forest and wildlife refuges.

575-3 Project in Recreation. A project is a culmination of the Master's degree. It can be either a practice-based service product or an applied research study that does not require a thesis format. Examples of projects may include grant proposals, program development, curriculum development, landscape design, manuals, visual productions, web page development, organizing special events or fund raising. Special approval needed from the instructor.

580-1 to 6 Readings in Leisure and Recreation. Readings in selected topics in leisure and recreation under staff supervision. Not more than three hours may count toward Master's degree. Special approval needed from the instructor.

596-1 to 6 Field Work in Recreation. Field work in an approved recreation department. Field work is in the student's field of interest. Supervision under approved agency officer in charge and a member of the department. Restricted to major in recreation. Special approval needed from the department.

599- 3 Thesis. Selecting, investigating, and writing on a research topic under the personal supervision of a member of the department. Designed to help the student to develop ability to design, conduct, analyze, and interpret research related to recreation and therapeutic recreation. Special approval needed from the department.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Rehabilitation Institute

<http://rehab.siu.edu/>

rehab@siu.edu

COLLEGE OF EDUCATION AND HUMAN SERVICES

Graduate Faculty:

Al-Ani, Salim S., Assistant Professor, Ph.D., Florida State University, 2014; 2015. Adult neurogenetics, dysphagia.

Austin, Gary F., Professor, *Emeritus*, Ph.D., Northwestern University, 1973; 1984.

Beck, Richard J., Associate Professor, *Emeritus*, Ph.D., University of Wisconsin, 1987; 1990. Chronic pain, substance abuse, workers' compensation, and cross-cultural counseling.

Benshoff, John J., Professor, *Emeritus*, Ph.D., University of Northern Colorado, 1987; 1988. Rehabilitation Counseling.

Blache, Stephen E., Professor, *Emeritus*, Ph.D., The Ohio University - Athens, 1970; 1971.

Bordieri, James E., Professor, *Emeritus*, Ph.D., Illinois Institute of Technology, 1980; 1986. Vocational evaluation, rehabilitation administration, job placement, rehabilitation management.

Boyer, Valerie, Associate Professor, Ph.D., SIUC, 2006; 2009. Child Language, animal-assisted therapy.

Bryson, Seymour L., Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1972; 1969.

Crimando, William, Professor, Ph.D., Michigan State University, 1980; 1980. Job development and placement, computers in rehabilitation, adjustment services, staff training and development.

Cuvo, Anthony J., Professor, *Emeritus*, Ph.D., University of Connecticut, 1973; 1973.

Davis, Paula K., Professor, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1989; 1995.

Dixon, Mark, Professor, Ph.D., University of Nevada-Reno, 1998; 2000. Behavior analysis, behavior therapy and medicine, gambling, brain injury.

Falvo, Donna, Professor, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1978; 1974.

Flowers, Carl, Professor and *Director*, Rh.D., Southern Illinois University Carbondale, 1993; 2002.

Franca, Maria Claudia, Associate Professor, Ph.D., Southern Illinois University Carbondale, 2006; 2008. Voice science and multicultural issues related to communication disorders and sciences.

Greene, Brandon, Professor, *Emeritus*, Ph.D., Florida State University, 1979; 1979. Behavior analysis in consumer affairs; parent and staff training.

Hoshiko, Michael S., Professor, *Emeritus*, Ph.D., Purdue University, 1957; 1957.

Jowett Hirst, Erica S., Assistant Professor, Ph.D., University of Kansas, 2014; 2015. Behavioral psychology, preference for skill-acquisition procedures, parent training.

Koch, D. Shane, Professor, Rh.D., Southern Illinois University, 1999; 2005. Rehabilitation counseling, alcohol, drugs, and disability.

Lehr, Robert P., Jr., Professor, *Emeritus*, Ph.D., Baylor University, 1971; 1973.

Nichols, Jane L., Assistant Professor, Ph.D., Michigan State University, 2007; 2012. Rehabilitation Counseling, challenges in communication, decision making, and addictive behaviors.

Poppen, Roger L., Professor, *Emeritus*, Ph.D., Stanford University, 1968; 1970.

Rehfeldt, Ruth Anne, Professor, Ph.D., University of Nevada-Reno, 1998; 2000. Autism, language acquisition and enhancement, supported employment, applied behavior analysis.

Redner, Ryan N., Assistant Professor, Ph.D., Western Michigan University, 2012; 2015. Tobacco regulatory science, treatment of smoking, application of behavioral economics.

Robertson, Stacia, Associate Professor, Ph.D., The Pennsylvania State University, 2003; 2004. Rehabilitation counseling, counseling psychology, diversity and rehabilitation, and vocational rehabilitation.

Rubin, Stanford E., Professor, *Emeritus*, Ed.D., University of Illinois, 1968; 1980.

Schultz, Martin C., Professor, *Emeritus*, Ph.D., University of Iowa, 1955; 1986.

Simpson, Kenneth O., Associate Professor, *Emeritus*, Ph.D., University of Nebraska-Lincoln, 1995; 1994. Alternative/ augmentative communication, motor speech disorders.

Smith, Linda, Associate Professor and *Associate Chancellor*, Ph.D., Southern Illinois University Carbondale, 1994; 1994. Language development/language disorders in children, multicultural populations, assessment of language in children.

Taylor, Darrell, Associate Professor, *Emeritus*, Ph.D., University of South Florida, 1992; 1992. Vocational evaluation and work adjustment, cognate rehabilitation counseling.

Upton, Thomas, Professor, Ph.D., The University of Iowa, 2000; 2000. Rehabilitation counseling, advances in rehabilitation, persons with brain injury, disability attitudes, and postsecondary educational accommodations.

Vieceli, Louis, Associate Professor, *Emeritus*, M.S.Ed., Southern Illinois University Carbondale, 1959; 1958.

Wright, W. Russell, Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1974; 1971

In response to pressing human and social needs, the applied field of rehabilitation has solidly entrenched itself as a professional discipline. Multidisciplinary courses of study have been drawn together from the behavioral, social, and medical sciences appropriate to the development of competent practitioners, supervisors, and programmers in rehabilitation and welfare agencies. The overall program is left purposely broad and flexible to permit the inclusion of training innovations and emerging career patterns.

The Rehabilitation Institute offers graduate programs leading to the Doctor of Philosophy degree and to the Master of Science degree with majors in behavior analysis and therapy, communication disorders and sciences, rehabilitation administration and services, and rehabilitation counseling.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in the Rehabilitation Institute. Applicants must pay this fee by credit card.

The Master's Degree Program

The master's degree programs in rehabilitation administration and services, behavior analysis and therapy are 45 semester hour programs and rehabilitation counseling is 51 semester hours. Candidates have the option of a research paper or a thesis. Candidates concentrating primarily on preparation for entry into the helping profession ordinarily opt to complete a research paper in their area of concentration. The thesis option typically requires a thesis of an experimental nature, a survey, or other form of research in which empirical data are collected and analyzed. Candidates must demonstrate their skills in formulating researchable questions or hypotheses, in identifying and/or manipulating relevant variables, and in the analysis and reporting of the results.

BEHAVIOR ANALYSIS AND THERAPY

The behavior analysis and therapy program is devoted to the empirically-based development and application of learning principles to a wide variety of human needs. Training is offered in behavioral practice, research and theory as it applies to problems such as child abuse and neglect, developmental disabilities, chronic medical conditions, and traumatic head injury.

Degree Requirements

In fulfilling the 45 semester hour requirement, the student must complete the required courses or their equivalent, at least two elective courses from those listed below, at least one 3-hour practicum, an internship, and either a research paper or thesis.

Required Courses

REHB 503	Basic Behavior Analysis
REHB 508	Complex Behavior Analysis
REHB 509A	Behavior Analysis Research Designs: Single-Subject Designs
REHB 509B	Behavior Analysis Research Designs: Group Designs
REHB 512	Legal and Ethical Issues in Behavior Analysis
REHB 535	Behavioral Observation Methods
REHB 574	Staff Training and Development
REHB 594B	Practicum in Behavior Analysis and Therapy

Elective Courses

REHB 515	Behavioral Applications to Medical Problems
REHB 543	Child Behavior
REHB 545	Behavior Analysis in Developmental Disabilities
REHB 557A	Self-Regulation of Behavior: Self-control
REHB 557B	Self-Regulation of Behavior: Biofeedback
REHB 563	Behavioral Analysis: Community Applications
REHB 584	Seminar in Behavior Analysis and Therapy
REHB 589	Professional Seminar in Rehabilitation

Internship

The student must complete satisfactorily 9 hours of REHB 595 (Internship in Rehabilitation) under the supervision of a behavior analysis and therapy faculty member. The internship is typically begun following two semesters of course work.

Research Paper or Thesis

The student must complete satisfactorily 3 to 6 hours of REHB 593 (Research in Rehabilitation) or REHB 599 (Thesis) under

the direction of a chairperson. The chairperson is a member of the behavior analysis and therapy faculty selected by mutual agreement between the student and the faculty member.

For the research paper, an additional graduate faculty member may be selected by mutual agreement between the student and the chairperson to serve as a reader. This is not required.

For the thesis, a second faculty member of the behavior analysis and therapy program will be selected by mutual agreement between the student and the chairperson to serve as thesis committee member. The committee will review the thesis prior to its initiation, as a prospectus, and after its completion, in an oral defense. At the oral defense, a third graduate faculty member, selected by mutual agreement between all parties, will be added to the committee to serve as a reader.

Courses (BAT)

406-3 Applied Behavior Analysis II. This course is an advanced survey of basic and applied research related to the principles and procedures in behavior analysis. As the second part of the ABA courses, this course serves to extend student's understanding of the principles of respondent and operant conditioning through exposure to basic research and demonstrations of interventions across diverse populations and settings. Prerequisite: REHB 312 with a minimum grade of C.

430-3 Behavior Therapy. This course will trace the history of behavior therapy from early days where aversive and punishment procedures were instated to modern day positive-based interventions. Various therapeutic approaches will be covered including behavioral relaxation training, functional analytic psychotherapy, acceptance therapy and positive/mindful therapies. Prerequisite: BAT 312, BAT 406 with minimum grades of C.

433-3 Applied Behavior Analysis with Pediatric Populations. This course provides students with knowledge related to the application of behavior analytic approaches to assessment and treatment of many childhood behavior problems. Topics covered will include assessment and treatment of problem behavior exhibited in school and home settings displayed by typically-functioning individuals, as well as individuals with a variety of developmental disorders. Prerequisite: BAT 312, BAT 406.

440-3 Ethics in Behavior Analysis & Therapy. This course focuses on ethical conduct within the field of behavior analysis, and emphasizes problem-solving strategies to assist practitioners in resolving ethical dilemmas that may come in the delivery of behavioral services. The course will provide an interpretation of the Behavior Analyst Certification Board guidelines for ethical conduct.

441-3 Assessment & Measurement. This course will provide an overview of behavioral observation methods, including approaches for monitoring and recording behavior over the course of behavior analytic services. Issues of reliability and validity will also be examined. Prerequisite: BAT 312.

445H-3 Autism and Intellectual Disabilities. This class introduces students to the variety of intellectual disabilities found within our society. Topics will range from how genetic mutations can result in life long disabilities, as well as how unknown factors produce disorders such as autism. Students

will learn about diagnoses, assessment and treatment for a variety of disorders and how to manage such disabilities throughout the lifespan.

452-3 Behavior Analytic Approaches to Individualized Service Planning. This course provides students with the skills to develop and evaluate service plans for individuals receiving community education, rehabilitation, and other services from a behavior analytic perspective. Topics covered include person-centered assessment, functional community based training, individualized assessment, and written treatment plans. Prerequisite: BAT 312; BAT 406 with minimum grades of C.

474-3 Performance Management. This course focuses on the application of behavior analysis within organizations. Using the principles of behavioral science, students will learn how to manage employee behavior, develop organizational goals and objectives, track performance of work teams, and provide objective measures of compensation. Topics will include program evaluation, motivation, performance reviews, and emerging trends in organizational design. Prerequisite: BAT 312; BAT 406 with minimum grades of C.

493-3 Single-Case Research Methodology. This course will provide students with the skills necessary to act as critical consumers of intervention research. It will also provide students with the analytical skills necessary to apply the logic of single-case research methodology to their work with the consumer. Emphasized will be the critique and interpretation of published research, as well as the writing competencies required for a student to successfully prepare a research paper. Prerequisite: BAT 312 and simultaneous enrollment in or prior completion of BAT 406.

495-3 Practicum. Application of behavioral analytical principles to clinical settings, cooperatively guided by Behavior Analysis and Therapy program faculty and human service agency staff. Prerequisite: BAT 312, BAT 406; BAT 440 with minimum grades of C.

COMMUNICATION DISORDERS AND SCIENCES

The communication disorders and sciences program offers graduate work leading to the Master of Science degree. The program in communication disorders and sciences is designed to develop competence in the assessment and treatment of persons with communication disorders.

Coursework is planned to meet the academic and professional requirements for state and national certification, which are required for professional employment. These requirements comprise a minimum of 75 semester hours of course work, at least 30 semester hours of which must be at the graduate level. The M.S. degree program in speech-language pathology will culminate in eligibility for the Certificate of Clinical Competence of the American Speech-Language-Hearing Association and state licensure. ASHA certification is required for work in agencies, hospitals, medical centers, and higher education. Students may take additional course work to qualify them for the The program maintains many active research facilities which provide laboratories and specialized equipment for the study of both the normal and impaired functions of the speech, language, and hearing processes.

Additional information regarding financial aid, programs,

and application procedures can be secured by writing to: Communication Disorders and Sciences Program, Rehabilitation Institute, Southern Illinois University Carbondale, Carbondale, IL 62901-4609.

Academic Standing

The graduate student whose overall graduate grade point average (GGPA) falls below 3.0 shall be placed on academic probation by the Graduate School. Students are restricted from clinical experiences while on academic probation. The time limit for being removed from probationary status shall be maximum of two consecutive regular semesters. If at this time the student's overall GGPA is not at least 3.0, the student's enrollment will be terminated. In addition, students whose semester GGPA falls below 3.0 for two consecutive regular semesters, will be terminated from the program. Grades of "C" or below are considered failing grades in the CDS graduate program.

Master's Degree Program Leading to Certification in Speech Pathology

The master's degree requires a minimum of 30 semester hours of acceptable graduate credit (3.0 average), at least 15 semester hours of which are at the 500 level. The program for the M.S. degree is a five semester course of study of approximately 63 to 71 semester hours. Specific course requirements and total number of hours are generally determined by advisement after consultation with the graduate student. The master's degree also requires that each student either successfully pass a comprehensive examination or successfully complete an approved thesis.

Students must select one of the following plans:

THESIS PROGRAM: CERTIFICATION IN SPEECH PATHOLOGY

Required Core Courses 30 hours

Speech-12

- CDS 505-3 Phonological Development & Disorders
- CDS 510-3 Stuttering: Behavior Assessment and Therapy
- CDS 512-3 Voice Disorders
- CDS 541-3 Neurogenics Disorders of Communication II

Language-9

- CDS 507-3 Language Disorders
- CDS 517-3 Seminar: Language Disorders Birth to Three
- CDS 540-3 Neurogenic Disorders of Communication I

Speech or Language-6

- CDS 485-3 Special Topics (Counseling)
- CDS 485-3 Special Topics (Medical Speech)

Speech, Language or Hearing-3

- CDS 485-3 Special Topics (Advanced Aural Rehabilitation)
- Optional Electives:

CDS 408, 450, 460, 533, 544, 550, 590, 596

Required Clinical Courses: 29-32 hours *varies depending on selection of CDS 598 or 597

- CDS 594-3 (A), 594-3 (B), 594-2 (C)
- CDS 598-9 Internship in Communication Disorders
- CDS 598-9 Internship in Communication Disorders (or CDS 597-12 Public School Practicum)

CDS 595-1, CDS 595-1, CDS 595-1

Required Research Tools: 6 hours

CDS 500-3 Research Design in Speech Pathology & Audiology

3 hours statistics or research design

Thesis: 3 hours

3 hours from CDS 599

Total: 68-71 hours *varies due to student selection of CDS 598 or 597

COMPREHENSIVE EXAMINATION PROGRAM: CERTIFICATION IN SPEECH PATHOLOGY

Required Core Courses (30 hours)

Speech-12

CDS 505-3 Phonological Development & Disorders
CDS 510-3 Stuttering: Behavior Assessment and Therapy
CDS 512-3 Voice Disorders
CDS 541-3 Neurogenic Disorders of Communication II

Language-9

CDS 507-3 Language Disorders
CDS 517-3 Seminar: Language Disorders Birth to Three
CDS 540-3 Neurogenic Disorders of Communication I

Speech or Language-6

CDS 485-3 Special Topics (Counseling)
CDS 485-3 Special Topics (Medical Speech)

Speech, Language or Hearing-3

CDS 485-3 Special Topics (Advanced Aural Rehabilitation)
Optional Electives:
CDS 408, 450, 460, 533, 544, 550, 590, 596

Required Clinical Courses: 29-32 hours *varies depending on selection of CDS 598 or 597

CDS 594-3 (A), 594-3 (B), 594-2 (C)
CDS 598-9 Internship in Speech-Language Pathology & Audiology
CDS 598-9 Internship in Speech-Language Pathology & Audiology
(or CDS 597-12 Public School Practicum)
CDS 595-1, CDS 595-1, CDS 595-1

Required Research Tools: 3 hours

CDS 500-3 Research Design in Speech Pathology & Audiology

Comprehensive Exam: 1 hours

1 hour from CDS 593

Total: 63-66 hours * varies due to student selection of CDS 598 or 597

Students may petition the faculty for a master's degree which does not include the clinical courses and does not culminate in eligibility for certification in speech pathology (minimum of 34 required hours)

Courses (CDS)

408-3 Communicative Disorders: Craniofacial Anomalies.

Development of cleft palate and related anomalies that cause communication disorders. Assessment and intervention of

the communication disorders related to these impairments. Prerequisite: Coursework on the normal structure and function of the speech and hearing mechanism.

410-3 Multicultural Aspects of Communication Disorders.

Students will explore different cultures and communication within these cultures. Emphasis will be placed on the relationship between cultural differences and communication disorders. Review of speech and language disorders in multicultural populations, as well as assessment and intervention strategies for use with this diverse group will be provided. Prerequisite: 302, 303 or consent of instructor.

420-3 Introduction to Audiological Disorders and Evaluation.

Bases of professional field of audiology (orientation, anatomy and physiology of the auditory system), major disease processes influencing hearing and their manifestations, measurement of hearing loss. Prerequisite: CDS 301 and 314.

450-3 Neuroanatomical Basis of Human Communication.

Examination of the central nervous system (brain and spinal cord) as it relates to normal and disordered human communication. Presentation of basic neuroanatomy, common neuropathologies relevant to communication disorders, and strategies in neurogenic problem solving. Prerequisite: 314 or consent of instructor.

460-3 Augmentative and Alternative Communication Systems.

An introduction to alternative and augmentative communication systems for non-vocal clients. Discussions include: use of aided and unaided augmentative systems, assessment procedures and training. Prerequisite: 301 or consent of instructor.

485-1 to 9 (1 to 3 per section) Special Topics in Communication Disorders and Sciences. Topical presentations of current information on special interests of the faculty not otherwise covered in the curriculum. Designed to promote better understanding of recent developments related to disorders of verbal communication. Open to advanced undergraduate and graduate students with consent of instructor. The student may take only one section per 700 numbers.

491-1 to 9 (1 to 3 per semester) Individual Study. Activities involved shall be investigative, creative, or clinical in character. Must be arranged in advance with the instructor, with consent of the chair. Special approval needed from the chair.

492-3 Diagnostic Procedures in Communication Disorders. A course devoted to discussion of the role of the speech and hearing clinician as a differential diagnostician. Special emphasis is placed on correlating information obtained from the oral-peripheral examination, articulation and language evaluation, audiometric and case history information in constructing the initial evaluation report. Special approval needed from the instructor.

493-3 Basic Clinical Practice. Current information regarding diagnostic, treatment and documentation procedures in speech-language pathology will be presented through active observation in the clinical environment and classroom instruction. Special approval needed from the instructor.

500-3 Research Design in Speech Pathology and Audiology. Evaluation of the strategies and procedural tactics of behavioral research.

505-3 Phonological Development and Disorders. An introductory discussion of the important linguistic, physiological and acoustic variables which affect language production at

the segmental and supra-segmental level of language; and an historical examination of the growth and development of distinctive feature systems from 1920 to the present. Concentration upon the mathematical, logical, physiological and acoustic assumptions of the various matrices, which have been developed. Prerequisite: 302 or equivalent. Special approval needed from the instructor.

507-3 Language Disorders. Discussion of the application of current theoretical implications and research findings to the syntactically impaired. This course emphasizes diagnostic and therapeutic models applicable to language disorders. Opportunities for research and clinical experience with young children displaying developmental language problems will be provided. Required for Master's students. Prerequisite: 303 or consent of instructor.

510-3 Stuttering: Behavior Assessment and Therapy. Explores the assumptions underlying diagnosis and assessment. Procedures specific to the differential assessment of fluency failures are examined, evaluated and related to therapeutic strategies and the tactics of behavior change. Special approval needed from the instructor.

512-3 Voice Disorders. An intensive study of the variables of air stream modulation resulting from impaired structures and function of head and neck.

517-3 Seminar: Language Disorders Birth to Three. In this course we will identify a typical physical growth, cognitive and motor functions and other areas of development that affect communication in children ages 0 to three years. It will also infuse cultural awareness, and provide information on working with families, peer professionals, processes of teaming, referral and collaboration. Prerequisite: 303 or equivalent or consent of instructor.

518-3 Problems of Communication and the Process of Aging. Review problems of communication related to the aging process and examine relevant diagnostic and therapeutic techniques.

519-3 Medical Speech-Language Pathology and Augmentative Communication. Disorders of communication that often occur in medical settings, including those related to traumatic brain injury and laryngectomy. Also focuses on persons with severe communication impairment and augmentative/alternative communication as a broad category of intervention procedures for this client population.

533-3 to 6 (3,3) Seminar: Speech and Auditory Perception. Special problems in hearing and communication science. Students may choose from a wide range of topics: speech acoustic, kinesthetic and vibrotactile perception, voiceprint identification, synthetic and compressed speech, digital speech, electro stimulation of hearing, and neuro-physiological basis for perception. One or more topics are pursued in depth. The seminar may be repeated for a total of six hours with different content. Special approval needed from the instructor.

540-3 Neurogenic Disorders of Communication I. Focus on aphasia and neurolinguistic science. A clinically oriented presentation of the aphasias, and related CNS language disturbances, will be integrated with an introduction to the broader field of neurolinguistics. Clinical aspects will focus on assessment of rehabilitation approaches in aphasia and related disorders. Other topics include cortical language representation, hemispheric functions (general), and review of

basic neurolinguistic literature. Prerequisite: 450 or consent of instructor.

541-3 Neurogenic Disorders of Communication II. Focus on the role of the pyramidal and extrapyramidal motor systems in speech production and speech disorders related to abnormalities in these motor systems. Discussion of the neurological basis and clinical management of the dysarthrias and verbal apraxia. Prerequisite: 540 or consent of instructor.

544-1 to 6 Seminar: Computer Techniques for Phonological Disorders in Children. A laboratory based examination of the distinctive features used by children in the normal and abnormal acquisition of phonology. Discussions and practical projects are developed to further the student's understanding of current assumptions concerning the acoustical aspects of abnormal phonation and speech sound production. Group projects are developed using computer based speech sound digitizing equipment. Course credit is based upon the time involved and the complexity of the topic. Digital software and laboratory examination topics are varied to meet individual student needs. May be repeated as topics vary to a total of 6 hours.

550-1 to 15 Professional Training Seminar. A special seminar that provides doctoral students the opportunity to prepare and present papers on various aspects of speech-language pathology and audiology. Liberal discussion will follow each paper. All doctoral students are required to enroll for one credit each semester until admitted to candidacy. Graded *S/U* only. Only four credit hours are counted toward the Ph.D. degree.

590-1 to 4 (1 to 2, 1 to 2) Readings in Speech-Language Pathology and Audiology. Supervised and directed readings in specific areas of speech pathology and in audiology. Maximum of two hours counted toward Master's degree. Special approval needed from the chair.

593-1 to 3 Research Problems in Speech-Language Pathology and Audiology. Individual work upon selected problems for research. Special approval needed from the chair.

594-1 to 18 (1 to 3 per semester) Advanced Clinical Practice Therapy/SLP. Active, supervised participation in the clinical process with emphasis on individualized assessment, treatment, counseling and documentation procedures. Overview of clinical practice in various settings, federal legislation and standards of ethical practice. Special approval needed from the instructor.

595-1 to 3 Clinic Seminar. Take concurrently with CDS 594. Topics differ each semester and are related to clinical practice, including those necessary for successful completion of advanced clinical practicum, internship/student-teaching, clinical fellowship and professional credentialing. Fulfills the reading instruction requirement for the Illinois Professional Educator License for speech-language pathologists. Partially fulfills the requirements for ASHA certification.

596-1 Advanced Clinical Practice: Hearing Diagnostics. Advanced clinical practice in hearing diagnostics. Emphasis will be placed on diagnostic techniques used in the preparation of basic and advanced audiological reports. Graded *S/U* only. Special approval needed from the instructor.

597-12 Public School Practicum. Public School internship provides the student with clinical experience under the supervision of a school-based certified speech-language pathologist. The student should receive experience with the

disorders of fluency, articulation, voice, organics, language and hearing. The student should also gain administrative experience. Lab Fee: \$100. Prerequisite: 150 to 200 clock hours. Special approval needed from the instructor.

598-6 to 12 Internship Communication Disorders. Internship in a selected medical center, hospital clinic, community agency, or private clinic. The internship provides the student with an intensive, professional, clinical experience under supervision of qualified and certified resident staff members. Prerequisite: consent of instructor.

599-1 to 6 Thesis.

600-1 to 32 (1 to 16 per semester) Dissertation.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

REHABILITATION ADMINISTRATION AND SERVICES

Students receive their degrees in Rehabilitation Administration and Services. Preference in admissions to the Administration concentration will be given to applicants having no fewer than 2 years of approved, acceptable rehabilitation or related work experience. All students must complete a minimum of 36 semester hours of graduate course work, which includes a research paper or thesis. Students applying for RA&S admission, but not meeting the professional experience criterion, may be considered for admission. If admitted, students will be required to complete a full-time internship (6 semester hours). During the first semester of full-time study, or a comparable time for part time students, the student must have a plan of study approved by the advisor and program coordinator. This plan of study normally includes rehabilitation administration core and professional course work, although specific plans may differ for students with varying backgrounds and career goals.

The Rehabilitation Administration requirements are as follows:

Rehabilitation Core (24 hours)

REHB 513-3 to 4	Medical and Psychosocial Aspects of Disability
REHB 519-3	Multicultural Counseling in Rehabilitation
REHB 593-6	Research in Rehabilitation
	or
REHB 593-3	Research in Rehabilitation
	and
REHB 599-3	Thesis

Rehabilitation Administration Concentration (24 hours)

REHB 570-3	Rehabilitation Administration
REHB 573-3	Programming, Budgeting, and Community Resources
REHB 576-3	Development and Supervision of Rehabilitation Employees

REHB 578-3	Program Evaluation in Rehabilitation
REHB 579-3	Advanced Fiscal Management in Rehabilitation
REHB 580-3	Professional and Community Relations in Rehabilitation
REHB 581-3	Professional Issues in Rehabilitation
REHB 582-3	Seminar in Rehabilitation Services

Rehabilitation Services Concentration

Students may opt for the Services program sequence (10 semester hours), as part of their Plan of Study. The Rehabilitation Services sequence includes:

REHB 521-3	Vocational Development and Placement
REHB 530-3	Assessment Procedures
REHB 575-4	Case Management
	and

REHB 595A,B-6 Internship in Rehabilitation

These may be taken in lieu of REHB 573, REHB 578, and REHB 579.

Practicum and Internship Requirements

Practicum and internships are not required for students admitted to the program with 2 years of approved, acceptable rehabilitation or related work experience. Students with minimal or no rehabilitation related work experiences will be expected to complete the required 6 semester hours of field experience.

Requirements for Research Paper or Thesis and Comprehensive Examination

All students are required to complete a scholarly research paper or thesis in a rehabilitation-related area and an oral comprehensive examination. The student completing a graduate thesis must orally defend it before a thesis committee.

REHABILITATION COUNSELING

Rehabilitation counseling is a process which assists individuals with disabilities to cope constructively with their disability, to maximize their abilities, and to enhance their quality of life physically, psychologically, socially, and vocationally. Through training, professional rehabilitation counselors obtain skills in counseling, evaluation, career exploration, job development and placement, and case management.

The focus of the rehabilitation counselor training program is to prepare professional rehabilitation counselors with the knowledge, skills, and attitudes needed to enter the field. During the training program, students acquire counseling skills, knowledge and understanding of medical and psychological impact of chronic illness and disability on all areas of the individual's life including vocational and independent living issues, as well as skills related to assessment and evaluation, and an understanding of the legislative, historical, and philosophical background of rehabilitation. Student's professional development is encouraged through participation in professional rehabilitation counseling organizations.

The rehabilitation counselor training program is fully accredited by the Council on Rehabilitation Education (CORE). Graduates of the program are eligible to sit for the CRC (Certified Rehabilitation Counselor) examination, a national examination administered by the Commission on Rehabilitation

Counselor Certification (CRCC). Additionally, in the state of Illinois, graduates are eligible to apply for license as a Licensed Professional Counselor (LPC).

General Requirements

The course of study within the rehabilitation counselor training program consists of a minimum of 51 semester hours and involves a blend of academic and clinical experiences. Students in the Rehabilitation Counseling Program must complete 42 hours after admission to the Rehabilitation Counseling Program. Students may transfer a maximum of 6 credit hours of credit taken prior to admission to the program to their 51 hour requirement if the course work is appropriate to Rehabilitation Counseling. Under no circumstances may previous work experience serve as equivalency for any credit hours or clinical practicum or internship experience. In addition to course work, students must complete one semester of practicum, one semester of internship, and a thesis, research paper, or research class in Rehabilitation. Before graduation students must also pass a comprehensive examination.

The required program of study is:

REHB 400	Introduction to Rehabilitation
REHB 521	Vocational Development and Placement
REHB 501	Introduction to Interpersonal Skills Development in Rehabilitation Counseling
REHB 513	Medical and Psychosocial Aspects of Disability
REHB 519	Multicultural Counseling in Rehabilitation
REHB 530	Assessment Procedures in Rehabilitation Counseling
REHB 551	Rehabilitation Counseling: Theory and Practice
REHB 575	Case Management in Rehabilitation Counseling
REHB 589	Professional Seminar in Rehabilitation
REHB 593	Research in Rehabilitation
	or
REHB 593-A	Research in Rehabilitation Counseling
	or
REHB 599	Thesis
REHB 594C	Practicum in Rehabilitation Counseling
REHB 595A,B	Internship in Rehabilitation

Practicum and Internship Requirements

Students in the Rehabilitation Counseling program are required to complete a total of four semester credit hours of practicum in Rehabilitation Counseling. All practicum and internship sites must be pre-approved by Rehabilitation Counseling faculty. Practicum involves the student's participation eight hours per week for 16 weeks at the practicum site. The majority of the student's time in practicum must be spent in direct client counseling. Counseling sessions must be audio or video taped or have provision for direct supervision by the student's supervisor, such as through a two way mirror. Students in practicum are required to meet with their faculty supervisor once per week during the 16 weeks of practicum in order to review tapes of counseling sessions. Rehabilitation Counseling students are also required to complete a total of eight semester credit

hours of internship in Rehabilitation Counseling. Prerequisite to internship is successful completion of the Rehabilitation Counseling practicum. General Rehabilitation Counseling internship requirements include an internship of 40 hours per week for 16 weeks or 20 hours per week for 32 weeks at a site approved by the Rehabilitation Counseling faculty, and one hour per week of supervision, preferably by a Certified Rehabilitation Counselor. During internship at least 50% of the student's responsibilities must include direct experience in individual and/or group counseling of persons with emotional, social, behavioral or physical disability.

Students are also given the opportunity within their program of study to take electives. In addition to the required course of study for rehabilitation counseling, students may choose to specialize in a particular area by taking additional elective courses. Examples of possibilities of specialization are listed below.

Studies in Substance Use Disorders and Behavioral Addictions

A sequence of courses is offered within the rehabilitation counselor training program for students interested in specialized counseling skills for work in treatment and other settings as a substance use disorders and behavioral addictions counselor. Students are required to complete a specific sequence of courses in addition to an internship in an approved rehabilitation and treatment setting. These courses would be taken in addition to completion of the courses required for the master's degree in rehabilitation counseling. Successful completion of this course sequence and field work enables students to sit for the State of Illinois CADC (Certification for Alcohol and Other Drug Counselors).

Graduate students from other disciplines in the University are eligible to enroll in these courses to complete these certification requirements. The required courses are:

REHB 461:	Introduction to Substance Use Disorders and Behavioral Addictions
REHB 471:	Treatment, Recovery and Relapse Prevention
REHB 558:	Interventions for Substance Use Disorders and Behavioral Addictions in Special Populations
REHB 566:	Substance Use, Behavioral Addictions and the Family

Studies in the Substance Use Disorders and Behavioral Addiction program, within the Rehabilitation Counselor Training Program are accredited by the Illinois Alcohol and Other Drug Abuse Certification Association, Inc. (IAODAPCA), and qualify as Advanced Training for the purpose of certification in Illinois.

Certificate in Substance Use Disorders and Behavioral Addictions

The Post-Baccalaureate Certificate in Substance Use Disorders and Behavioral Addictions housed in the Rehabilitation Counselor Training Program in the Rehabilitation Institute, is open to graduate students interested in developing specialized counseling skills for work in treatment and other settings as a substance use disorders and behavioral addictions counselor. Participation in these courses will allow the student to sit for

the State of Illinois CADC (Certification for Alcohol and Other Drug Counselors). Students must complete 15 total credits of required coursework, and an academic discipline-based 500 hour internship (8 credits). Courses include: REHB 461, 471, 558, and one approved elective.

Studies in the Substance Use Disorders and Behavioral Addiction Training Program are accredited by the Illinois Alcohol and Other Drug Abuse Certification Association, Inc. (IAODAPCA), and qualify as Advanced Training for the purpose of certification in Illinois.

For more information contact:

Dr. Jane Nichols, Ph.D., NCC, LPC, CRC, Rehabilitation Counseling and Administration Program, Southern Illinois University, Rehn Hall - Mail Code 4609, 1025 Lincoln Dr., Carbondale, IL 62901, Email: jlnichols@siu.edu, Telephone: 618-453-8291

Studies in Aging

This area of special study offered within the Rehabilitation Institute includes a sequence of three elective courses in aging in addition to those courses required for the general rehabilitation counseling curriculum, and an internship in an agency or facility which serves older adults. Students in other disciplines within the University are eligible to enroll in any of the three courses in aging, however only rehabilitation students will be eligible for the internship.

DOCTOR OF PHILOSOPHY DEGREE PROGRAM

The doctoral program in rehabilitation prepares students to function effectively as rehabilitation educators, researchers, or administrators. It does this by fostering the student's development and acquisition of relevant conceptual and experiential skills in evaluation and research methodologies, in rehabilitation service, in rehabilitation education practices, or in the management of service units.

Admission and Retention Standards

All applicable policies and procedures of the Graduate School with regard to the admission of doctoral students will be followed. Requirements for admission to the doctoral program in rehabilitation exceed those of the Graduate School. The admissions committee of the doctoral program will review all candidates carefully for their special strengths. The following will be considered for all candidates.

1. High academic achievement (normally indicated by a grade point average of 3.5 on a 4-point scale) in a master's program in rehabilitation or a closely related field at an accredited university.
2. Interest in conducting rehabilitation research.
3. Two years of successful performance equivalent to full-time paid employment (post-baccalaureate) in a rehabilitation or related professional position. This may include an approved internship experience at the master's level.
4. At least three letters of recommendation by professional persons familiar with the applicant's performance in academic, research, or service work settings.

5. GRE scores dating back no farther than 5 years.

Applicants will be considered for acceptance into the doctoral program at the beginning of either the fall or spring semester. Courses in which a grade below *B* is obtained will not be counted toward satisfying the hour requirements for the degree.

Doctoral Committee

The student shall select a chair who will serve as his/her major adviser. In consultation with the chair the student shall select a doctoral committee which is approved by the coordinator of doctoral studies and the Graduate School. At least one member shall be external to the Rehabilitation Institute.

Working together with the chair, the student shall develop a plan of study, designating the courses to be completed. This plan shall be approved by the student's doctoral committee and by the coordinator of doctoral studies and then shall be made a matter of record. Further, the doctoral committee shall serve as the student's dissertation committee.

Admission to Candidacy

Admission to candidacy is granted by the dean of the Graduate School upon the recommendation of the faculty responsible for the student's program after the student has fulfilled the Graduate School residency requirement for the doctoral degree and passed the preliminary examinations.

The written preliminary examinations are designed to assess the breadth and depth of the student's knowledge. They are prepared, administered, and evaluated by Rehabilitation Institute faculty committees appointed by the coordinator of doctoral studies. The preliminary examinations will ordinarily be taken in the fall of the second year of doctoral study.

Dissertation

After admission to candidacy, the student will prepare a dissertation based on original research conducted under the direct supervision of the dissertation chair and committee. The requirements of the Graduate School will govern the formation of the dissertation committee and the preparation and defense of the dissertation. While the dissertation is in preparation, the student will register for no fewer than 24 semester hours in REHB 600, Dissertation. The dissertation should conform to the current edition of the Publication Manual of the American Psychological Association and the standards required by the Graduate School.

Degree Requirements

The doctoral program emphasizes mastery of skills in re-search methodology, knowledge of medical and psychosocial aspects of disability, and knowledge of public policy on disability, as well as competency in the area of rehabilitation counseling, rehabilitation administration, behavior analysis and therapy, or communication disorders and sciences. The course of study requires a minimum of 96 post-baccalaureate semester hours, 24 of which are dissertation hours and 39 of which are fulfilled by required courses. All remaining coursework taken by the student will be electives, selected with the approval of the student's doctoral committee.

Required Courses

The student must have successfully completed the following courses no later than 24 months after entering the doctoral

program:

QUAN 506-4 Inferential Statistics
QUAN 507-4 Multiple Regression

Program of Study

Each area of concentration (BAT, CDS, RAS, and RCT) has a specific program of study. While each area of concentration requires the same number of credits of: a) Research Development & Utilization (20 credits) and b) Professional Issues & Methods in Rehabilitation (12 credits), the specific required and elective courses available within these areas may vary.

Nine semester hours in REHB 592: Professional Supervision in Rehabilitation (teaching or research) must also be successfully completed during the student's tenure in the doctoral program.

The student's preparation at the master's level will be evaluated and up to 30 hours of didactic course work may be accepted toward the completion of the 96 hour minimum requirement for the doctorate. Graduate level didactic courses in rehabilitation counseling, rehabilitation services, rehabilitation administration, behavior analysis and therapy, and communication disorders and sciences will usually be acceptable. Course work in related areas such as counseling, psychology, and social work may qualify.

The goal of the program is to develop high quality professionals. Thus, the student must demonstrate competence in the areas of rehabilitation services offered by the Rehabilitation Institute. This is accomplished through the student's master's degree program, previous work experience, the required courses, supervised professional experiences, and electives. Ph.D. degree graduates should be well prepared for leadership roles in the areas of rehabilitation administration, service, education, or research.

Certificate in Gerontology

The Rehabilitation Institute participates in the Certificate in Gerontology interdisciplinary program and offers a class, REHB 405 Introduction to Aging and Rehabilitation, which is a Certificate requirement. For more information on the Certificate program, please see Certificate Programs in Chapter One of the Catalog.

Courses (REHB)

Courses in this unit may require the purchase of supplemental materials not to exceed \$10 per course. Field trips are required for certain courses.

400-3 Introduction to Rehabilitation. An introduction to the broad field of rehabilitation, to include the processes (services), facilities and personnel involved.

401-3 Disability, Diversity and Society. This course will address the relationship between prevailing societal attitudes and environmental designs and the opportunity of persons with disabilities to participate fully in society. It will examine the physical, mental, gender and cultural characteristics of persons with disabilities as determinants of their needs, values, aspirations and opportunities. How public policies can promote or limit inclusion and equal opportunities for persons with disabilities will also be addressed.

403-3 Independent Living Rehabilitation. Survey of principles and methods of independent living for persons with disabilities with attention to client assessment for rehabilitation, effective

techniques for specific individuals with disabilities, and the variety of types and organization of independent living programs.

405-3 Introduction to Aging and Rehabilitation. (Same as GRON 405) Introduction to the field of aging, including social, political, economic and legal issues pertinent to an aging society and rehabilitation.

406-3 Introduction to Behavior Analysis and Therapy. A survey of the principles and procedures in behavior analysis and therapy and the scope of its application to human needs and problems. Prerequisite: 312.

445-3 to 12 Rehabilitation Services with Special Populations. Procedures and programs pertinent to the care and treatment of special populations. Three semester credits will ordinarily be granted for each unit. Special approval needed from the instructor.

(a)-9 (3, 3, 3) Alcohol and Drug Abuse.

(b)-9 (3, 3, 3) Psychiatric Rehabilitation.

(c)-9 (3, 3, 3) Juvenile Offender.

(d)-9 (3, 3, 3) Mental Retardation.

(e)-9 (3, 3, 3) Physically Disabled.

(f)-9 (3, 3, 3) Public Offender.

(g)-9 (3, 3, 3) Sensory Disabled.

(h)-9 (3, 3, 3) Developmental Disabilities.

446-3 Psychosocial Aspects of Aging. (Same as GRON 446) Selected theories of psychosocial aspects of aging will be presented and the psychological and sociological processes of aging with the ensuing changes will be related to these conceptual frameworks. Included for discussion and related to field experience will be such concerns as stress reactions to retirement, physical disabilities, impact of reduced economic resources, and other personal-social changes in aging. Topics will address the knowledge base needed by students concerned with rehabilitation of aging clients in institutional, community and home settings. Therapeutic techniques to ameliorate these stresses will be an integral part of the course.

447-3 Biomedical Aspects of Aging. The aging process in a life-span developmental perspective; biological theories of aging, physiological changes in middle and old age and their effects on behavior, performance potential, and psychosocial functioning; senility and other age-related disabilities, their prevention and management; geriatric health maintenance and rehabilitation; institutionalization; death and dying.

452-3 Individual Service Planning. This course provides students with the skills to develop individual service plans for individuals being served in community rehabilitation programs. Topics covered include person-centered assessment, functional community based training, and written treatment plans. Prerequisite: REHB 205, REHB 400, REHB 445(one of A-H), with grades of C or better, or consent of instructor.

453-1 to 4 Personal and Family Life Styling. The academic and personal competencies that are characteristic of fully-functioning, integrated persons within the context of our twentieth century environment will be systematically reviewed for adoption in every day living as well as in professional functions. Participants will focus on and experience life styling theories, models, and skills for their own growth and development and learn to assess basic risk-factors in their rehabilitation clients and families prior to helping them

program a more balanced, synergistic, and holistic approach to living. Special approval needed from the instructor.

461-3 Introduction to Substance Use Disorders and Behavioral Addictions. Introduction to the field of substance use and behavioral addictions counseling with an overview of foundation topics underlying professional practice. This course will focus primarily on substance use and behavioral addiction models, medical and psychological consequences, drug classification systems, legislation, and other clinical and public policy issues that may be relevant to the field.

468-3 Sexuality and Disability. Research and rehabilitation practices pertaining to the unique psychosexual aspects of various chronically disabling conditions will be examined.

471-3 Treatment, Recovery and Relapse Prevention. A comprehensive examination of assessment, diagnosis, referral, and treatment processes for substance use disorders and behavioral addictions. This course will cover treatment provided in a variety of settings. Students will acquire skills to provide person-centered treatment recovery and relapse prevention services, using evidence based practices. The ASAM and the DSM V will be featured as treatment tools. Students will utilize case formulations to gain experience in the treatment plan development and implementation process. Ethical practices will be emphasized. Prerequisite: REHB 461 with a minimum grade of B.

479-3 Technical Writing in Rehabilitation. Fundamentals of writing skills for rehabilitation specialists, including preparation and drafting of program/grant proposals, vocational evaluation/work adjustment reports, news releases and other publicity materials. Special approval needed from the instructor.

490-1 to 6 (1 to 3 per semester) Readings in Rehabilitation. Supervised readings in selected areas. Special approval needed from the instructor.

493-3 Applied Research in Professionalism Rehabilitation Practice. This course will provide students with the skills necessary to act as critical consumers for rehabilitation-related research. It will also provide students with the analytical skills necessary to apply the logic of research methodology to their work in implementing evidence based practices with consumers. Emphasis will be on developing student capacity to complete focused, topical reviews of the rehabilitation literature, effectively evaluate research methodology and practices and determine appropriateness of new approaches for application in the field. Prerequisites: REHB 205, REHB 407 with grades of C or better.

494-1 to 12 Work Experience in Rehabilitation. Credit granted for work experience in rehabilitation. Rehabilitation 494 and 594 both cannot be counted for a graduate degree, only one or the other can satisfy requirements toward a Master's degree. Graded *S/U*. Special approval needed from the department.

498-3 Special Topics in Rehabilitation Research and Practice. The topics in this course will be variable and will focus on current challenges in the rehabilitation field. Students will explore current research, evidence based practice and public policy as they pertain to the topic. Specific attention will be directed to how these topics may pose potential ethics/professional challenges and/or challenges for consumer advocacy or how the topic may represent new, innovative opportunities for the field.

501-3 Introduction to Interpersonal Skills Development

in Rehabilitation Counseling. Focuses upon facilitative interpersonal communication skills necessary in Rehabilitation Counseling Practice. The course provides theory and practice in facilitative interpersonal communication in counseling, behavior therapy and administration services. Included is prepracticum orientation. Special approval needed from the instructor.

503-3 Basic Behavior Analysis. Philosophy, terminology, and basic methodology of experimental and applied behavior analysis. Focuses on a variety of operant and respondent conditioning procedures for shaping new behaviors and modifying established behaviors. Special approval needed from the instructor.

504-3 Foundations of Rehabilitation Research. This course includes: the logic of scientific inquiry; the concepts of research questions and hypotheses; the notion of variables; the relationship among theoretical constructs, operationalism, and measurement instrument reliability and validity; the concepts of control, internal validity and causal inference; sampling methods and external validity; and experimental and descriptive research. Restricted to enrollment in Ph.D. degree program or consent.

505-3 Behavioral Gerontology. (Same as GRON 505) This course examines the application of behavioral principles to problems associated with aging such as deficits in the activities of daily living and social skills, wandering, aggression, incontinence, depression and anxiety, and dementia among others. Environmental redesign and alternative performance strategies will also be addressed. Behavioral training and supervision of staff members who work with older individuals is also presented. Special approval needed from the instructor.

507-3 Behavior Consultation and Management. Focus on the behavior analysis techniques needed for use in organizational and consultation settings. The fundamentals for developing effective consulting relationships are presented. Skills for becoming a behavior analytic consultant in clinical settings such as schools, developmental disability facilities, and managed care environments are presented. Additional behavior analytic consultant skills will be taught for effective practice of organizational behavior management in business and industry settings. Prerequisite: REHB 503.

508-3 Complex Behavior Analysis. Experimental analysis of procedures that result in acquisition, maintenance, and attenuation of complex individual and social behavior. Special approval needed from the instructor.

509-6 (3,3) Behavior Analysis Research Designs. Focuses on behavior analysis research design and methodology. Three semester hours will be granted for each unit. (a) Single subject experimental designs; (b) Group experimental designs. Special approval needed from the instructor.

511-3 Functional Analysis and Interventions – Autism. This course will survey research on the assessment and treatment of challenging behavior for individuals with autism. Defining characteristic, procedural variations, and strengths and limitations of the three general approaches to functional assessment will be reviewed. In addition, emphasis will be placed on strategies for using functional assessment information in the design of interventions to reduce challenging behavior. Prerequisite: REHB 503 or consent of instructor.

512-3 Legal and Ethical Issues in Behavior Analysis. Focuses on federal and state legislation, litigation, policies, guidelines, and other forms of legal and ethical control of the professional practice of behavior analysis and therapy. Implications for research and service will be discussed. Special approval needed from the instructor.

513-1 to 4 Medical and Psycho-Social Aspects of Disability. A review of the impact of disease and trauma on the human system with special attention on the effects physical limitations and socio-emotional correlates have on human functioning and the rehabilitation process. Special approval needed from the instructor.

515-3 Behavioral Applications to Medical Problems. Examines the use of behavior change procedures and applied behavior analysis in the treatment and rehabilitation of medically related problems such as obesity, alcoholism, headaches, hypertension and cerebral palsy; also, compliance to medical regimens, e.g., diabetes, dental hygiene, exercise; and promotes the utilization of health facilities and community health programs. Issues in training medical personnel to disseminate behavior change programs are also covered. Prerequisite: REHB 503 or consent of instructor.

519-3 Multicultural Counseling in Rehabilitation. (Same as REHB 419) The major focus is on building multicultural competencies in working with the basic cultural, economic and psychosocial processes relative to the rehabilitation of people from diverse and underrepresented populations and societies.

520-3 Clinical Supervision in Rehabilitation Seminar. This course is designed to prepare doctoral and advanced graduate students with an overview of theory, research, and methods of clinical supervision in Rehabilitation. Special approval needed from the instructor.

521-3 Vocational Development and Placement. Relates the psychosocial meaning of work, process of vocational development, theories of occupational choice and labor market trends to current and innovative methods of job development, selective placement and follow-up with individuals with disability. Special approval needed from the instructor.

530-3 Assessment Procedures in Rehabilitation Counseling. Review of fundamental bases of measurement, criteria for evaluating tests, exposure to representative instruments in major categories, and use of test and work samples in assessing the functioning abilities and work potential of individuals with disabilities to seek and hold gainful employment. Special approval needed from the instructor.

531-3 Individual Assessment Procedures in Rehabilitation. Thorough familiarization and practice with independent assessment devices used in program selection and job placement of individuals with various handicaps. Special approval needed from the instructor.

533-3 Vocational Appraisal. An extensive exposure to instruments designed for use with vocational rehabilitation clients. Administration and interpretation of a wide variety of instruments used to gain information to be used in planning for vocational development. Both didactic and experiential to include consideration of information obtained from interviews, tests, and other diagnostic techniques. Special approval needed from the instructor.

535-3 Behavioral Observation Methods. Behavioral targeting,

observational recording techniques, and issues of validity and reliability of measurement relevant to rehabilitation will be examined. Prerequisite: previous or concurrent enrollment in either REHB 452, or REHB 503 or consent of instructor.

543-3 Child Behavior. A systematic analysis of child behavior. Included is an examination of popular books on child rearing. Emphasizes approaches for remediation of behavior disorders. Terminology. Special approval needed from the instructor.

545-3 Behavior Analysis in Developmental Disabilities. Consideration of behavioral principles as applied in the development of responsive behavior in persons with developmental disabilities. Special approval needed from the instructor.

550-3 Assistive Technology. This course reviews applications of assistive technology (AT) used by people with disabilities. The course covers various types of AT ranging from low to high technology. Additionally, the course explores devices that are commercially available and those that are customized. Strategies for modifying tasks rather than using technology are reviewed.

551-4 Rehabilitation Counseling: Theory and Practice. A didactic and experiential analysis of the underlying theory and techniques of individual and group counseling of individuals with disabilities. Special approval needed from the instructor.

557A-3 Self-Regulation of Behavior: Self-Control. The course provides a thorough review of self-control techniques and their application to habit disorders such as smoking, eating, exercise, time-management and nervous habits. Special approval needed from the instructor.

557B-3 Self-Regulation of Behavior: Biofeedback. The course provides a comprehensive review of experimental and clinical studies of biofeedback. It concentrates on stress related disorders and provides supervised laboratory experience. Special approval needed from the instructor. A \$10 laboratory fee is charged.

558-3 Interventions for Substance Use Disorders and Behavioral Addictions in Special Populations. This course provides a broad understanding of issues and trends in substance use disorder and behavioral addiction treatment, in a multicultural and diverse society, with a specific focus on treatment methods that reflect the culture-specific values and treatment needs of clients. The course will include an analysis of current literature related to the cultural nuances of diverse client populations with substance use or addictive behavior disorders. Formal case presentations including diagnoses and issues of multiculturalism related to clinical work will be used to facilitate student learning. Prerequisite: REHB 461 with a grade of B or better.

560-3 Private Sector Rehabilitation. A comprehensive introduction to many of the unique characteristics of rehabilitation services offered within the private-for-profit sector which can be applied by practitioners on a national basis.

563-3 Behavioral Analysis: Community Applications. All aspects of behavior analysis applications in the community are examined including historical development, the "state of the art", practical issues and obstacles to conducting behavioral analysis/community research; future trends and directions. Prerequisite: REHB 503 or consent of instructor.

566-3 Substance Use, Behavioral Addictions and the Family. Explores the foundations of interdisciplinary treatment and prevention services for families experiencing challenges related to substance use disorders and behavioral addictions. Students

will acquire skills in the use of strength based, systematic approaches in working with families in group and individual counseling. The course will include an exploration of the changing concepts associated with the definition of family and challenges associated with non-traditional families. Ethical issues will be examined in addition to interagency collaborative practices. Prerequisite: REHB 461 with a grade of B or better.

567-3 Behavioral Theories of Addiction. Focus on the behavior analysis techniques needed for use in the diagnosis and treatment of various addictions. The fundamentals of scientific behavioral research in addiction are presented along with current effective treatment strategies that promote behavior change. Skills will be developed for becoming a behavior analytic addiction researcher or treatment provider in clinical settings serving persons with gambling and other addictions.

569-3 Lifespan Issues in Autism. The goal of this course is to review and examine a wide variety of issues related to autism. Topics are explored from multiple perspectives in order to gain insight into the unique needs of individuals with autism across the lifespan. The course provides opportunities to analyze current knowledge about autism and identify profitable directions through which professionals can improve existing approaches and influence care provision. Special approval needed from the instructor.

570-3 Rehabilitation Administration. Problem solving approach to current issues in organizational structure and management functions in public and voluntary rehabilitation agencies, decision making, leadership, program development and evaluation.

571-3 Advanced Disability Seminar. Specifically, this seminar reviews the historical and philosophical bases of rehabilitation; the evolution of rehabilitation counselor roles and functions; disability models; rehabilitation service delivery models; vocational rehabilitation and career theorists; serving underserved persons, and facilitating acceptance of varying disabilities of those we serve. Restricted to doctoral student or consent of instructor.

573-3 Programming, Budgeting, and Community Resources. Designed to prepare the student to develop and operate comprehensive or specialized rehabilitation programs with special attention to resource development, fiscal management, and community and public relations. Prerequisite: REHB 570 or consent of instructor.

574-3 Staff Training and Development. This course prepares the student to design, implement, and supervise an institutional program to train staff in methods of direct service to the institution's clients. Each student will actually design and submit a program through simulation. Lecture/workshop format.

575-4 Case Management in Rehabilitation Counseling. Basic procedures in providing and coordinating available human services based on individual need in the context of a professional-client relationship, and the basics of recording and reporting such services. Special approval needed from the instructor.

576-2 to 3 Development and Supervision of Rehabilitation Employees. Current and progressive supervisory practices in rehabilitation with emphasis on employee development through in-service training, periodic evaluation and related methods.

Special approval needed from the instructor.

577-3 Philosophy of Science Issues in Rehabilitation. This course will explore the central questions in the philosophy of science as they pertain to the field of rehabilitation, including, but not limited to demarcation criterion, science vs. pseudoscience, scientific revolutions, inductive vs. deductive logic and theory building, and moral, cognitive, and contextual values in science. The issues will be explored within the context of research and theory in rehabilitation.

578-3 Program Evaluation in Rehabilitation. An analysis of the development and utilization of a program evaluation system in rehabilitation settings with focus given to system design, monitoring techniques and service program development. Students will be trained in the advanced practice of program evaluation techniques and their application to rehabilitation settings. Special approval needed from the instructor.

579-3 Advanced Fiscal Management in Rehabilitation. Application of fund and functional accounting in rehabilitation to include fiscal reporting and record keeping, fiscal planning and management in rehabilitation. Prerequisite: REHB 570 and REHB 573.

580-3 Professional and Community Relations in Rehabilitation. Examination of the linkages and needs of rehabilitation programs and agencies in the area of community and professional relations, with special reference to the role of administrator. Application of marketing principles to the management of external relations in rehabilitation settings. Special approval needed from the instructor.

581-3 Professional Issues in Rehabilitation. Focus is on legal and ethical issues and issues related to legislative and public policy formulation. Implications for rehabilitation programs, practice and research are emphasized.

582-3 Seminar in Rehabilitation Services. Special consideration of factors in the organization and management of rehabilitation services. Special approval needed from the instructor.

583-1 to 4 Seminar in Work Evaluation. Select attention to procedures/models for assessing work readiness of personnel with disabilities. Special approval needed from the instructor.

584-1 to 6 (1 to 3 per semester) Seminar in Behavior Analysis and Therapy. Special topics and new developments in modifying human behavior. Special approval needed from the instructor.

585-1 to 4 Seminar in Counseling/Coordination Services. Consideration of special issues in counseling and delivery of services. Special approval needed from the instructor. (a) Guided Imagery (b) Group Counseling in Rehabilitation.

586-3 Seminar in Job Development and Placement. Consideration of special issues in job development and placement philosophy, techniques and research concerning individuals with disabilities. Special approval needed from the instructor.

587-3 Seminar in Correlates of Disability. A systematic analysis of the behavioral socio-cultural implication of disabling conditions. Emphasizes the rehabilitation process in remediation of debilitating conditions. Prerequisite: REHB 513 or consent of instructor.

588-3 Seminar in Research in Rehabilitation. Advanced seminar focusing upon specialized and advanced topics in research in rehabilitation. This course is designed to prepare doctoral students in rehabilitation with the special tools needed

to carry out doctoral dissertation and other advanced research projects. Special approval needed from the instructor.

589-1 to 18 (1 per semester) Professional Seminar in Rehabilitation. The course involves advanced level presentations focusing on current research, applied practices, and innovations in rehabilitation. Presentations are made by faculty, graduate students and guest experts. A minimum of four semester hours required for Doctor of Philosophy degree.

590-3 Coexisting Disabilities: Alcohol, Drugs, and Disability. An intensive analysis of the impact of alcohol and other drug abuse (AODA) on the lives of persons with disabilities. Additional focus of the impact of AODA on case management and the rehabilitation service delivery system. Restricted to doctoral students in rehabilitation or consent of instructor.

591-1 to 18 Independent Projects in Rehabilitation. Systematic readings and development of individual projects in pertinent rehabilitation areas. No more than six hours may be counted toward the Master's degree. Special approval needed from the instructor.

592-1 to 16 Professional Supervision in Rehabilitation. Experience provided in the supervision of research, teaching, and rehabilitation services. No more than four hours may be taken in any semester. Restricted to doctoral student in rehabilitation. Special approval needed from the instructor.

593-1 to 18 Research in Rehabilitation. Systematic investigation of factors and procedures relevant to rehabilitation. No more than six hours may be counted toward the Master's degree. Special approval needed from the instructor.

593A-1 to 18 Research in Rehabilitation. Systematic investigation of factors and procedures relevant to rehabilitation. No more than six hours may be counted toward the master's degree. **(a)** Counseling. To facilitate knowledge/skill acquisition for the rehabilitation professional in becoming a knowledgeable consumer of rehabilitation re-search. To facilitate the completion of the Master's project. Special approval needed from the instructor.

594A-1 to 12 Practicum in Rehabilitation. Supervised experiences in agencies in rehabilitation. **(a)** Administration. Rehabilitation facilities management/supervision, in planning, programming and evaluation. **(b)** Behavior analysis and therapy. Application of behavioral analysis/methods in human treatment and in management. **(c)** Counseling. Development of counseling skills with individuals and groups to include work related functions. Prerequisite: (a,b,c) admission to the specific degree program; **(c)** 501, 551, and 589.

595-1 to 12 Internship in Rehabilitation. **(a)** Extended practice in rehabilitation settings cooperatively guided and supervised by agency staff and university faculty. Graded *S/U* only. Prerequisite: appropriate degree specific practicum. Prerequisite: appropriate degree specific practicum. Special approval needed from the department. **(b)** Counseling. Development of advanced counseling skills with individuals with disability and other work-related functions. Graded *S/U* only. Prerequisite: REHB 594c.

599-1 to 6 Thesis. Special approval needed from the instructor.

600-1 to 30 (1 to 12 per semester) Dissertation. Minimum of 24 hours to be earned for the Doctor of Philosophy degree. Restricted to doctoral candidate in rehabilitation.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research

paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Social Work

<http://socialwork.siu.edu/>

mmmjw@siu.edu

COLLEGE OF EDUCATION AND HUMAN SERVICES

Graduate Faculty:

Buila, Sarah, Associate Professor, *Graduate Program Director*, M.S.W. SIUC 2005; 1998. Ph.D., University of Illinois. Generalist practice, substance abuse, psycho-social disorders, health/mental health practice, social support and the management of chronic mental illness, cultural competency, food security, and social justice.

Dreuth-Zeman, Laura, Professor, Ph.D., Vanderbilt University, 1996, 1998. Health and mental health policy and program evaluation focusing on delivery systems, payment models, school climate, and social work education; clinical practice with families, women and children recovering from addiction, trauma or mood disorders.

Horton, Karla, Assistant Professor, Ph.D., University of Texas at Arlington, 2010, 2011. Social work, special education, counseling curriculums for the school environment, teen pregnancy/parenting, diversity in schools, and relational aggression and delinquency.

Jurkowski, Elaine T., Professor, Ph.D., University of Illinois at Chicago, 1997; 1998. Social work theory, program evaluation and community social services and systems changes, research methods, health, public health, community planning/counseling, gerontology, and media as an intervention.

Kawewe, Saliwe, Professor and *Interim Director*, Ph.D., Saint Louis University, 1985; 1996. Advanced generalist practice, child welfare, policy, research, international social welfare policy, social development strategies in Third World communities, HIV/AIDS prevention and treatment, women and children, cultural diversity, and indigenous populations.

Mukherjee, Dhrubodhi, Associate Professor and *Baccalaureate Program Director*, Ph.D., University of South Carolina, 2005; 2005. Social network analysis, gerontology and social connectedness, social capital, volunteerism and civic participation, international social development, technology, social media, and social work, millennium development goals, use of technology in social work practice.

Saleeby, Patrica, Assistant Professor, Ph.D., Washington University St. Louis, 2005, 2012. Health, mental health, disability policy and practice, capability approach to disability and social work, community and organizational management, and service learning.

Reese, Dona J., Associate Professor, Ph.D., University of Maryland, 1994; 2008. Hospice social work, focusing on social work outcomes, measurement, spirituality, and cultural competence.

Reichert, Elisabeth, Professor, Ph.D., University of Tennessee at Knoxville, 1989; 1994. Practice, policy, human behavior and the social environment, clinical social work with sexual abuse/incest survivors, battered women, crisis intervention, human rights policy and practice, and international social work.

Soliman, Hussein, Professor, Ph.D. University of Tennessee, 1993; 2004. Research methodology, generalist practice, practice

evaluation, school social work, social policy, disasters and traumatic stress, international social work.

The School of Social Work offers graduate work leading to the Master of Social Work degree. The M.S.W. program is fully accredited by the Council on Social Work Education.

Master of Social Work

The Master of Social Work degree program offers preparation for professional social work practice. The organizing principle of the M.S.W. program is the improvement of the quality of individual life through the enhancement of social and economic justice and opportunity. Upon completion of the M.S.W. program, the student will have acquired knowledge, values, and skills consistent with the social work profession and be capable ultimately of engaging in autonomous social work practice. Graduates will be able to effectively deliver the social services needed to meet human needs in both urban and rural areas.

Admission Requirements

To be considered for admission to the regular two-year M.S.W. program applicants must:

1. Meet all admission requirements set forth by the Graduate School.
2. Have a GPA of at least 3.0 (on a 4.0 scale) in the last two years of undergraduate course work.
3. Show evidence of a broad liberal arts base with substantial preparation in the social and behavioral science and humanities.
4. Demonstrate content in human biology and introductory statistics.
5. International students must have a TOEFL score of 550 (paper); 213 (computer); 80 (internet) or above. The IELTS exam is also acceptable (a minimum score of 6.5).

Note: A standardized test score, such as the GRE, is not required for admission, however, students applying for a graduate assistantship will be required to have an official GRE score on file in the School of Social Work.

Entry is in the fall semester for the regular two-year program.

To be considered for admission to the advanced standing M.S.W. program applicants must:

1. Have a B.S.W. degree from an accredited social work program.
2. Meet all requirements listed for the regular two-year program.

Entry is in the summer semester for the advanced standing program.

Applications may be made at <http://gradschool.siu.edu/applygrad/index.html>

The deadline for applications is February 1 for the advanced standing program and March 15 for the regular two-year program. Applicants who complete their undergraduate degree requirements by December and have all application material submitted to the School of Social Work by October 1 may be considered for early admission and may take electives prior to entry into the summer or fall cohort.

Applicants admitted for either the regular two-year program or for advanced standing may be required to take additional courses as a condition of admission. Documented potential for the profession of social work is considered a part of the admission criteria, which may also include an interview prior to acceptance.

Each application will be individually reviewed; however, meeting all stated criteria will not automatically guarantee admission to the school.

The deadline for applications is February 1 for the advanced standing program and March 15 for the regular two-year program.

Applicants must apply online, both to the Graduate School and the School of Social Work. However, official transcripts should be sent directly to the School of Social Work. Students accepted into the M.S.W. Program must register for the semester they are admitted.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Social Work.

Degree Requirements

Students admitted to the regular two-year program are required to complete the first year foundation curriculum and the second year advanced curriculum. They are required to complete a minimum of 60 semester hours of graduate course work taken in the approved sequence. The foundation curriculum consists of 30 semester hours and includes the following courses:

Fall (15 semester hours)

- SOCW 500-3 Human Behavior and the Social Environment
- SOCW 501-3 Generalist Practice
- SOCW 510-3 Families, Groups and Organizations in Social Work
- SOCW 541A-2 Foundation Seminar I
- SOCW 541B-2 Foundation Practicum I
- Elective 2

Spring (15 semester hours)

- SOCW 504-2 Ethnic Diversity in Social Work
- SOCW 511-3 Social Work Research
- SOCW 521-3 Social Work Policy Practice
- SOCW 542A-2 Foundation Seminar II
- SOCW 542B-2 Foundation Practicum II
- Elective-3

Students admitted to the advanced standing program are required to complete nine semester hours of transition courses, with a grade of *B* or better in each course, and a minimum of 30 semester hours in the second year graduate course curriculum in the approved sequence. The transition courses include the following:

Summer (9 semester hours)

- SOCW 502-3 Perspectives on Human Behavior for Social Work Practice
- SOCW 512-3 Advanced Social Work Research
- SOCW 522-3 Advanced Social Work Policy Practice

The second year curriculum is organized around the following areas of emphasis: health/mental health; and children, youth and families. The school also offers course work in preparation

for School Social Work Type 73 Certification by the Illinois State Board of Education. Applicants must indicate their preference of area of emphasis. Although we attempt to accommodate each applicant's first preference, we do not guarantee students will receive their first choice. The second year curriculum includes the following courses in each area of emphasis:

Health/Mental Health

Fall (15 semester hours)

- SOCW 531-3 Psychosocial Disorders
- SOCW 543A-3 Advanced Practicum Seminar I
- SOCW 543B-3 Advanced Practicum I
- SOCW 551-3 Advanced Social Work Practice I: H/MH
- SOCW 555-3 Advanced Policy Analysis and Practice: H/MH

Spring (15 semester hours)

- SOCW 532-3 Program Evaluation for Social Work
- SOCW 544A-3 Advanced Practicum Seminar II
- SOCW 544B-3 Advanced Practicum II
- SOCW 552-3 Advanced Social Work Practice II: H/MH
- Elective-3

Children, Youth and Families

Fall (15 semester hours)

- SOCW 531-2 Psychological Disorders
- SOCW 543A-3 Advanced Practicum Seminar I
- SOCW 543B-3 Advanced Practicum I
- SOCW 561-3 Advanced Social Work Practice I: CY&F
- SOCW 565-3 Advanced Policy Analysis and Practice: CY&F

Spring (15 semester hours)

- SOCW 532-3 Evaluation Research
- SOCW 544A-3 Advanced Practicum Seminar II
- SOCW 544B-3 Advanced Practicum II
- SOCW 562-3 Advanced Social Work Practice II: CY&F
- Elective-3

Certification in School Social Work (Please refer to the Teacher Education Program (TEP) for the most current information on certification/endorsement requirements for Social Work)

Those students who wish to qualify for certification in school social work need to:

- a. Complete the core courses listed above under the children, youth, and families emphasis.
- b. Take the following courses (which will satisfy the elective requirements):
 1. SOCW 533-2 Social Work Practice in the School
 - SOCW 567-2 Advanced School Social Work Issues
 2. SPED 408-3 or SPED 420-3
 3. EDUC 319

And

EAHE 501-3 or EAHE 503-3 (A waiver may be available with permission of the School of Social Work)
- c. The field placement (SOCW 543B-3 and SOCW 544B-3) will be in a school setting for two consecutive semesters.
- d. SPED 408-3 or SPED 420-3 is a prerequisite to field

placement for students in the School Social Work Certification Program and must be completed before fall semester field placement (SOCW 543A,B).

- e. Pass the Illinois State Board of Education Test of Academic Proficiency (TAP) and the School Social Work Certification Test.

In each year of study, in addition to classroom work, students are required to take field practicum. Applied learning through field practice is an integral component of social work education. Field instruction provides the student with the opportunity for applying social work theory and conceptual learning to realistic and practical situations. Students may not substitute current or past, paid or volunteer, social work experience for the field practicum requirements of the M.S.W. program. While the school takes into account the student's career goals in the selection of the field practicum assignment, we do not guarantee that students will receive their first preference of field assignment.

M.S.W. students must maintain an overall G.P.A. of 3.0 (on a 4.0 scale).

Within limits imposed by the policies of the Graduate School of the University, transfer credits will be permitted for up to 30 semester hours for applicants who wish to transfer from another accredited graduate program in social work.

Student Advisement

Upon admission to the Master of Social Work degree program, the student will be assigned a faculty adviser. The adviser is responsible for supervision of the student's progress and is available for career counseling as well as assisting in other matters which might arise in connection with the student's work.

Financial Aid

The program offers limited financial assistance through graduate assistantships. Other scholarships, grants-in-aid, etc., may be applied for through the Graduate School, Southern Illinois University Carbondale, Carbondale, IL 62901-4716.

M.S.W./J.D. in Social Work and Law

A concurrent degree in social work and law is designed to educate practitioners in law and social work to effectively utilize the problem-solving strategies and techniques of both professions. Students prepared in this program will develop an understanding of the ethics, language, research, history, and processes of both professions. Individuals so trained will be uniquely prepared for careers which combine both legal and human service needs such as administration, supervision of the provision of services, legal aspects of services, public policy leadership roles, family practice and community planning and development. Accepted students could complete a concurrent program in as few as three years with full-time summer attendance. Students must meet the requirements of admission and be admitted separately to the School of Social Work and the School of Law. Students currently enrolled in social work or law programs must have a minimum GPA before they may enroll in the concurrent program. The minimum GPA for social work is 3.0 and for law is 2.5. Social work students interested in this program should consult with the School of Social Work

Graduate Program Director.

Certificate in Gerontology

The School of Social Work participates in the Certificate in Gerontology interdisciplinary program and offers a class, SOCW 575 Policy and Program Issues of Aging, which is a Certificate requirement. For more information on the Certificate program, please see the section Certificate Programs in Chapter One of the Catalog.

Courses (SOCW)

478-1 to 6 International Social Work: Generalist Policy and Practice. (a) Germany; (b) Mexico; (c) India; (d) Bangladesh; (e) Canada; (f) South America; (g) Asia; (h) Africa; (i) Classroom based; (j) other. Provides an international perspective for the study of social work groups, organizations and communities. Focuses on the examination of assessment and problem solving interventions and cross-cultural comparisons of policy and practice.

496-1 to 3 Independent Research in Social Work. Provides opportunity for students to conduct independent research with the guidance of a faculty member. Topics of research are identified by the student and faculty member. Special approval needed from the instructor and School Director.

500-3 Human Behavior and the Social Environment in Social Work. Life span development. Students acquire a foundation knowledge of human development in the social environment over the life span. Normal development stages and impacts of social systems on the growth of individuals in diverse populations of rural areas is emphasized. Prerequisite: admission to the School of Social Work. Restricted to admission to the program.

501-3 Generalist Practice. This course emphasizes the development of advanced intervention skills related to generalist practice with individuals, families, groups, organizations and communities in multiple-service, community-based agencies characteristic of rural areas. Includes mandatory interviewing skills weekend. Restricted to admission to the program.

502-3 Perspectives on Human Behavior for Social Work Practice. Selective examination of the theoretical basis of development and inter-relational aspects of individuals and families throughout the life span. Normal development stages and impacts of social systems on the growth of individuals in diverse populations of rural areas is emphasized. Prerequisite: eligibility for advanced standing. Must be taken concurrently with SOCW 512 and 522. Grade of B or better is required. Restricted to Admission to the School of Social Work with eligibility for advanced standing.

504-2 Ethnic Diversity in Social Work. Examination of issues involved in delivering social services to various ethnic and cultural groups. Sensitizes students to personal, familial, or community problems of ethnic or cultural origin. Implications for understanding social services to populations who have experienced discrimination are discussed. Restricted to admission to the program.

505-2 Foundations of Social Work and Services. Examination of both historical and philosophical developments of the social welfare system as an institution and social work as a profession in the United States. Future trends in social work education and

practice are predicted based on social and political mentality prevailing at present time. Restricted to admission to program.

510-3 Families, Groups and Organizations in Social Work. Examination of systems and advanced generalist practice theories within the context of rural, integrated and multiple-service social services delivery systems. Specific practice examples will be used to facilitate understanding of how theory guides practice with families, groups, organizations and communities. Restricted to admission to the program.

511-3 Social Work Research This course emphasizes the importance of scientific inquiry within social work practice and covers the application of basic concepts of research methodology to social work including problem formulation, research design, sampling, measurement, and data analysis. Includes single-system methodology as it applies to social work practice in rural areas. Prepares students to conduct an individualized single-system project based on practice intervention with clients or systems in their practicum setting in the final semester of their studies. Prerequisite: an introduction to statistics course or concurrent enrollment allowed. Restricted to admission to the program.

512-3 Advanced Social Work Research. Selective examination of inductive and deductive methods in social work knowledge building. Includes research methodologies and group designs as applied to social work practices in rural areas. Prepares students to conduct an individualized single-system project based on practice intervention with clients or systems in their practicum setting in the final semester of their studies. Prerequisite: eligibility for advanced standing. Must be taken concurrently with 502 and 522. Grade of *B* or better is required to continue in the advanced standing program. Restricted to Master of Social Work students or consent of the School.

520-3 Social Work Practice II. Foundation practice focusing on process, methods, and skills for work with groups, communities, and organizations. Prerequisite: SOCW 510.

521-3 Social Work Policy Practice. Examines the historical development of social welfare and professional social work in Europe and the United States. The course introduces a systematic framework for policy analysis with particular attention paid to policies affecting diverse rural populations, women and minorities. Restricted to admission to the program; restricted to social work graduate students only.

522-3 Advanced Social Work Policy Practice. Selective examination of the historical development of social welfare and professional social work in Europe and the United States. Uses a systematic framework for policy analysis with particular attention paid to policies affecting women, low income, oppressed and diverse rural populations. Prerequisite: eligibility for advanced standing. Must be taken concurrently with 502 and 512. Grade of *B* or better is required to continue in the advanced standing program. Restricted to Master of Social Work students or consent of the School.

530-3 Substance Abuse and Social Work Practice. In-depth knowledge of social work assessment of both individuals and families involved in substance abuse. Students are provided with advanced knowledge and skills in various social work intervention models applicable to the area of substance abuse.

531-3 Psychosocial Disorders. (Same as SOCW 446J) This course provides a basic knowledge of psychopathology and

how it impacts individual functioning and family dynamics. Students become familiar with the theoretical basis and the basic structure of DSM-IV and models of interdisciplinary clinical practice in mental health. Prerequisite: Completion of foundation or transition courses (SOCW 502, 512, 522 or SOCW 500, 501, 504, 510, 511, 521, 541A&B, 542A&B) or consent from the School's Graduate Program Director.

532-3 Program Evaluation for Social Work. This course focuses on the application of research methods especially in evaluating programs or program components in the area of concentration and to the practicum experience. Includes content on self-evaluation in practice. Prerequisite: SOCW 511 and 512 with a grade of *B* or better and an introduction to statistics course. Restricted to Master of Social Work students or consent of the School.

533-2 Social Work Practice in the Schools. In-depth examination of the history and practice of social work in primary and secondary schools. Roles of school social workers and practice approaches are emphasized. Prerequisite: completion of foundation or transition courses, SPED 408 or SPED 420. Restricted to admission to the School of Social Work certification program.

535-3 Legal Aspects of Social Work Practice. Examination of law and legal procedures that relate directly to social work practice in general. Legal perspectives of a specific concentration field of practice are discussed in depth.

541A-2 Foundation Seminar I. Seminar which is taken concurrently with Foundation Practicum I. The seminar emphasizes the relationship between the practicum experience, social work practice, policy, human behavior and the social environment (HBSE) and research curricula. Restricted to admission to the program.

541B-2 Foundation Practicum I. Field practicum which is taken concurrently with Foundation Seminar I and is a structured and supervised on-site field practice in a selected agency. Practicum is equivalent to 12 hours per week for 15 weeks (a total of 360 hours) over two semesters. Graded *S/U*. Restricted to admission to the program and concurrent registration in 541A.

542A-4 Foundation Seminar II. Seminar which is taken concurrently with Foundation Practicum II and serves as a continuation of 541A. The seminar emphasizes the relationship between the practicum experience, social work practice, policy, human behavior and the social environment (HBSE) and research curricula. Prerequisite: SOCW 541A,B. Restricted to Master of Social Work students or consent of the School.

542B-2 Foundation Practicum II. Field practicum which is taken concurrently with Foundation Seminar II and serves as a continuation of 541B, which is a structured and supervised on-site field practice in a selected agency with concurrent seminar. This is the second on-site field practice with concurrent seminar. Continuation of 541B. Graded *S/U*. Prerequisite: 541A,B and concurrent registration in 542A. Restricted to Master of Social Work students or consent of the School.

543A-3 Advanced Practicum Seminar I. Concentration specific practicum seminar with concurrent field practicum, 543B. Practicum seminar focuses on the application of advanced generalist theory, knowledge and skills covered in the curriculum within the specific concentration area (Children,

Youth and Families/School Social Work; Health/Mental Health). Prerequisite: completion of foundation or transition courses. Restricted to Master of Social Work students or consent of the School.

543B-3 Advanced Practicum I. On-site concentration specific field practice in an approved agency with appropriate supervision equivalent to 20 hours per week for 15 weeks (a total of 607 hours is required to be completed in two semesters) with a concurrent seminar. The practicum focuses on the application of advanced concentration theory, knowledge and skills covered in the curriculum. Graded *S/U*. Prerequisite: completion of foundation or transition courses. Restricted to Master of Social Work students or consent of the School.

544A-3 Advanced Practicum Seminar II. A continuation of the concentration specific practicum seminar with field practicum 544B. Continuation of 543A. Prerequisite: SOCW 543 A & B and registration in SOCW544B. Restricted to Master of Social Work students or consent of the School.

544B-3 Advanced Practicum II. A continuation of the concentration specific practicum of 20 hours per week in the field for 15 weeks with a concurrent seminar 544A. Graded *S/U*. Continuation of 543B. Prerequisite: SOCW 543 A&B and concurrent registration in 544A. Restricted to Master of Social Work students or consent of the School.

546-3 to 33 Selected Topics. (Same as SOCW 446) Selected Topics (may be repeated with different sections) **a.** Social work counseling with individuals; **b.** Social work practice with groups; **c.** Social work intervention with traumatic stress events; **d.** Medical social work; **e.** Substance abuse and mental health; **f.** Social work family therapy; **g.** Administration and grant writing; **h.** Child welfare; **i.** Spirituality; **j.** Adoption; **k.** Other.

550-2 Social Work Practice in Health and Mental Health Settings. Examination of social and emotional impacts of illness and death on individuals. Implications of physical and mental disorders to social work practice are discussed with particular emphasis on cultural, racial, religious, gender and other psychosocial aspects of illness. Prerequisite: completion of foundation or transition courses or consent of the school.

551-3 Advanced Social Work Practice I: Health and Mental Health. This is the first of a two-part course that emphasizes health and mental health delivery within systems theory and an advanced generalist practice skills framework. Includes case studies and exercise aimed at practice with diverse populations in rural areas. Prerequisite: completion of foundation or transition courses. Restricted to Master of Social Work students or consent of the School.

552-3 Advanced Social Work II: Health and Mental Health. The second part of the practice course on advanced skills in health and mental health. Continuation of 551. Application of treatment modalities. Prerequisite: SOCW 543 & SOCW 551. Restricted to Master of Social Work students or consent of the School.

555-3 Advanced Policy Analysis and Practice: Health and Mental Health. This course applies a systematic analytical framework for a critical and in-depth analysis of federal, state and local policies that shape programs affecting health and mental health in rural settings. Examines how policy impacts practice with diverse populations. Prerequisite: completion of foundation or transition courses. Restricted to Master of Social

Work students or consent of the School.

557-3 Community Mental Health and the African-American. Introduction to clinical techniques useful for facilitating community functions and changes within the context of the African-American experience. An exploration of the culture of the African-American community builds the basis for community mental health service strategies.

558-3 Women and Community Mental Health. Examination of mental health problems of American women and exploration of effective interventive strategies. Emphasis on rural mental health services for low-income women.

559-3 Aging and Mental Health. (Same as GRON 559) Examination of the nature and etiology of mental health problems facing older Americans. Review of research reports to build a theoretical basis for mental disorders.

560-2 Social Work Practice with Children and Youth. Advanced level of knowledge and skills that are relevant to the prevention and amelioration of problems related to maladaptive parent-child interaction, parental inability to provide child care, parents' unrealistic expectations of a physically and mentally limited child. Prerequisite: completion of foundation or transition courses or consent of the school.

561-3 Advanced Social Work Practice I: Children, Youth and Family. This is the first part of a two-part course that emphasizes family-centered practice (family preservation, integrated services) within systems theory and an advanced generalist practice skills framework. Includes case studies and exercises aimed at practice with diverse populations in rural areas. Prerequisite: completion of foundation or transition courses. Restricted to Master of Social Work students or consent of the School.

562-3 Advanced Social Work Practice II: Children, Youth and Family. The second part of the practice course on advanced skills. Continuation of 561. Application of treatment modalities. Prerequisite: SOCW 543 & SOCW 561. Restricted to Master of Social Work students or consent of the School.

565-3 Advanced Policy Analysis and Practice: Children, Youth and Families. This course applies a systematic analytical framework for a critical and in-depth analysis of federal, state and local policies that shape programs affecting children, youth and families in rural settings. Examines how policy impacts practice with diverse populations. Prerequisite: completion of foundation transition courses. Restricted to Master of Social Work students or consent of the School.

567-2 Advanced School Social Work Issues. Exploration of policies, programs, practice and legislative trends affecting public service in school social work. Prerequisite: SOCW 533. Restricted to Master of Social Work students or consent of the School.

570-3 Gerontology and Social Work. Examines the major psycho-social and ecological theories of human aging within the framework of social work practice. Extrapolations of those theories and application of them to social work practice and research are emphasized.

575-3 Policy and Program Issues of Aging. (Same as GRON 575) Examination of public policies that impact on the quality of life of the elderly. Major programs are identified and analyzed. Future policy issues are discussed.

576-1 to 6 Selected Topics in Aging Practice Issues.

Examination of selected knowledge and skills useful for gerontological social work practice. In-depth study on specific topics will be conducted. Prerequisite: SOCW 570.

577-1 to 4 Selected Topics in Research. Individualized advanced research projects related to student interest. Graded *S/U*. Prerequisite: completion of foundation or transition courses or consent of the school.

578-3 International Social Work. Critical examination of the nature and scope of social welfare programs in other nations including: personal social services, income maintenance, health care and social development programs. Emphasis is on policies in Third World countries. Prerequisite: completion of foundation or transition courses or consent of the school.

598-1 to 4 Social Work Research Paper. Preparation of a final research paper as partial requirement for the M.S.W. degree. Graded *S/U* only. Prerequisite: completion of foundation or transition courses. Special approval needed from the school.

599-3 Thesis in Social Work. A partial and optional requirement for the M.S.W. degree. A written report of the student's research project in the chosen area of concentration. Graded *S/U* only. Prerequisite: completion of foundation or transition courses or consent of the school.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs or who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Sociology

<http://sociology.siu.edu/>

sociology@siu.edu

COLLEGE OF LIBERAL ARTS

Graduate Faculty:

Alix, Ernest K., Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1966; 1967.

Barber, Kristen M., Assistant Professor, Ph.D., University of Southern California, LA, 2011; 2011. Qualitative methodology, sex and gender, occupations/professions.

Burger, Thomas, Associate Professor, *Emeritus*, Ph.D., Duke University, 1972; 1973. Theory, history of social thought, social stratification.

Calhoun, Thomas C., Professor, *Emeritus*, Ph.D., University of Kentucky, 1988; 2001.

Crowe, Jessica A., Assistant Professor, Ph.D., Washington State University, 2008; 2013. Community development, environment, food security, social networks.

Danaher, William., Professor, Ph.D., Washington State University, 1994. Work, inequality, culture.

Hawkes, Roland K., Associate Professor, *Emeritus*, Ph.D., Johns Hopkins University, 1967; 1970.

Hendrix, Lewellyn, Professor, *Emeritus*, Ph.D., Princeton University, 1974; 1971.

Hope, Keith, Professor, *Emeritus*, Ph.D., London University, 1963; 1986.

Nall, Frank C., II, Associate Professor, *Emeritus*, Ph.D., Michigan State University, 1959; 1964.

Reed, Jean-Pierre, Associate Professor, Ph.D., University of California-Santa Barbara, 2000; 2009. Cultural sociology, race relations, social movements, revolutions and change, theory.

Schneider, Mark A., Associate Professor, *Emeritus*, Yale, 1985; 1994.

Shelby, Lon R., Professor, *Emeritus*, Ph.D., University of North Carolina, 1962; 1969.

Sherkat, Darren E., Professor, Ph.D., Duke University, 1991; 2001. Religion, social movements, quantitative methods.

Ward, Kathryn B., Professor, *Emeritus*, Ph.D., University of Iowa, 1982; 1982.

Whaley, Rachel B., Associate Professor, Ph.D., University of Albany, SUNY, 1999; 2006. Criminology, gender, and quantitative methods.

Wienke, Chris., Associate Professor, Ph.D., University of Pittsburgh, 2003; 2008. Family, sexuality, gender, mental health, and social inequality.

The Department of Sociology offers graduate work leading to the M.A. and Ph.D. degrees. The M.A. degree program gives students an opportunity to acquire a general knowledge of sociology through lecture courses, seminars, and exposure to a variety of theoretical and methodological approaches. The Ph.D. degree program centers around advanced offerings in the areas of theory, methods, social movements, gender, sexualities, religion, communities, and inequalities. A special concentration in criminology, deviance, and criminal justice allows interested students to pursue a substantial part of their doctoral studies in Criminology and Criminal Justice. Students may pursue a

Women, Gender and Sexuality Studies graduate certificate at the same time as well.

The faculty of the department is research-oriented and encourages a similar orientation on the part of its students. The department maintains a small library and state of the art computer facilities for qualitative and quantitative analyses.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Sociology. This must be paid by credit card at the time you submit the online application.

Admission to Graduate Study in Sociology

The department requires an undergraduate GPA of 3.0 for admission to the M.A. degree program and a graduate GPA of 3.25 for admission to the Ph.D. degree program. The Department of Sociology does not have direct post-baccalaureate degree entry into the doctoral program; students need to have a residential two-year M.A. degree in sociology or closely related field (exceptions may be made on a case by case basis) to be considered for admission to the Ph.D. Program. To apply to either program, the student must submit a statement of purpose, three reference letters, a writing sample, a CV, and official transcripts of all undergraduate and graduate academic grades to the department for review by the graduate admissions committee. Scores from the Graduate Record Examination (GRE) are required for consideration for admission and university-wide fellowships.

Complete applications must be received by January 1. Admitted students begin the subsequent fall semester. Admission for the spring semester will be given only in exceptional circumstances. International students must achieve 550 or better on the paper-based TOEFL, 213 on the computer-based TOEFL, 80 on the internet-based TOEFL, and 6.5 on the IELTS.

Persons seeking more information should email the current Director of Graduate Studies as listed on our website. Students can access our department website: <http://cola.siu.edu/sociology/>. Here you can find more information about the department, faculty, students, and the link for applications. For more information about graduate fellowships, which have January/February deadlines and financial assistance programs, see the Graduate School website: <http://gradschool.siu.edu/cost-aid/>.

Admission from SIUC MA to Ph.D. Program. Students who enter the M.A. program are not automatically admitted to the Ph.D. program until successful completion of the M.A. degree and admission approved by Graduate Studies Committee and Graduate School. Students who wish to continue work towards a doctoral degree must submit a formal application including the departmental application form, a statement of purpose, two letters of recommendation, a writing sample, and transcripts (these can be pulled from student's file). Applications will be reviewed using the policies, procedures, and guidelines applicable to external Ph.D. applicants and will involve an assessment of performance in the M.A. program. Applications must be received by January 1 to receive full consideration for fellowships.

Graduate Assistantships and Fellowships

A limited number of assistantships for qualified students are available through the department on a competitive basis. There are also various fellowships awarded by the Graduate School in university-wide competition that have deadlines in January and February. Students funded through the department are required to enroll in a minimum of nine credit hours each semester. Funding is normally limited to four semesters for M.A. degree students and eight semesters (up to 48 months including Dissertation Research Award) for Ph.D. degree students. A student's continued funding is contingent on the student's satisfactory progress in the program, annual evaluations by faculty (on students' performance in classes & readings, work assignments, progress in program, and professional service and activities), passing comprehensive exams in a timely manner, and on the availability of funds.

Graduate Student Evaluation Criteria

Acceptance into either degree program, continuation/retention in either degree program, and funding in the graduate program are at the discretion of the department. Students need to maintain a GPA of at least 3.0. If a GPA goes below a 3.0, the student is placed on academic probation by the Graduate School. Any graduate student on academic probation whose grade point average remains below 3.0 for two consecutive semesters in which she or he is enrolled, excluding summer sessions, will be permanently suspended from the Graduate School, and thus from our program. In other words, the student has one semester to bring the GPA back up to an average of 3.0. Decisions about admission, retention, and funding will be based on five criteria:

1. Timely progress in the program. Students are expected to make normal progress toward the degree, and failure to progress according to the Graduate Catalog for Sociology will diminish priority for funding (dependent on availability), admission, and continuation. M.A. students are expected to complete all coursework and the master's paper within two years. Residency in the Ph.D program requires 24 credit hours of coursework (only 6 hours of SOC 600 count toward this 24) and must occur prior to advancing to candidacy. The doctoral examination is taken in January of the 2nd year for students with an external MA and in January of the 1st year for students with an SIUC Sociology MA. The substantive comprehensive review paper must be completed within one year of the doctoral comprehensive examination but it is highly recommended that it be completed within a few months. Students advance to candidacy after achieving residency, successfully completing all required courses, completing both examinations, and defending the dissertation prospectus. Students need 24 hours in SOC 600 to complete the Ph.D (only 6 of which may occur prior to candidacy). Failure to make timely progress in the program will decrease the likelihood of departmental funding and may impact continuation in the program. Retention and funding in the Ph.D program are also contingent on faculty evaluations that occur annually (see the Annual Review section for details and situations that likely lead to lowered priority for funding and/or dismissal from the program). Total time from SIU M.A. through Ph.D. should not usually exceed 5 years; completion of Ph.D. requirements for a student with an external M.A. should not exceed 4 years.

2. Grades. MA students need to maintain a GPA of 3.0. Students must earn an A or B for course credit. Courses cannot be re-taken due to the two year rotation of scheduling courses. If an MA student earns a C in a course, the Graduate Studies Committee will review the case to determine if the student may remain in the program or if the student will be dismissed by the department. If a student is allowed to remain in the program with one grade of C, the Graduate Studies Committee may require the student take an alternative course (earning an A or B) to assure that the relevant skills/knowledge are achieved. A grade lower than a C (or two C's or one C and a lower grade) will result in dismissal from the program. The department of Sociology allows two years for the completion of the MA degree program; decisions regarding exceptions are made on a case by case basis. Failure to make timely progress may result in dismissal from the program and lowers a student's priority for departmental funding.

Ph.D students need to maintain a GPA of 3.0. Students must earn an A or B for course credit. Courses cannot be re-taken due to the two year rotation of scheduling courses. A grade of C or lower in a required/research tool course is grounds for immediate dismissal from the program. However, in the case of a C grade in a required course, exceptions and possible remedies will be considered by the Graduate Studies Committee on a case by case basis. If a student earns a grade of C in a non-research tool course (i.e., an elective), the course will not count toward the required credit hours and must be replaced with a grade of A or B in an additional course and the student must meet the terms of academic probation set by the Graduate School. A grade of D or F in an elective is grounds for immediate dismissal.

- Incompletes in coursework will diminish priority for funding.
- Students with incompletes in theory (SOC 501 & SOC 502) and methods/stats (SOC 526A and 526B, SOC512, SOC514) will be ineligible to take the comprehensive examinations.
- Students with incompletes will have lower priority for acceptance into the Ph.D. program.

Plagiarism is grounds for de-funding and dismissal from the program.

3. Exams. Successful completion of the doctoral and substantive exams increases priority for funding, while failing decreases priority. Failing the doctoral comprehensive exam may preclude departmental funding; failing the substantive review paper is grounds for immediate dismissal (see exam section for information on grading and revisions).

4. Prospectus and research. Priority for funding and retention will decrease if a student has not made progress towards a prospectus committee by the end of the second year of Ph.D. work for those with an SIU Sociology MA and third year of Ph.D. work for others. Then the dissertation prospectus should be defended by the middle of the relevant subsequent year. Students will lose funding and may be dropped from the program if they

do not defend a proposal by the end of their 3rd year in the PhD program (for students with an external MA); exceptions will be considered by the Graduate Studies Committee on a case by case basis. Additionally, students who present professional papers or published papers and who submit/publish papers will be given increased priority for departmental funding. Once the student advances to candidacy, he/she has 5 years to complete the dissertation per the Graduate School guidelines. Despite that, any opportunity for funding beyond the 48 months is contingent upon resources and excellent progress on the dissertation as evidenced by completed data collection, analyses, and chapters as relevant.

5. Teaching evaluations. Priority for teaching-related funding will also be tied to successful teaching as indicated by teaching evaluations and faculty over-sight. Students with strong research skills (indicated by coursework and exam performance) will be given priority for research-related funding contingent on resources.

Master of Arts Degree

The Master of Arts degree in sociology requires a minimum of 30 semester hours of coursework and a research paper. Students are required to take the following three courses: SOC 501, Classical Sociological Theory (3 hrs); SOC 526A, Statistical Data Analysis in Sociology I (4 hrs); and SOC 512, Sociological Research Methods and Design (4 hrs.). Students must receive an A or B in all three classes. Students are required to enroll in four additional graduate seminars (12 hrs) in sociology or related disciplines (one of which may be at the 400 level), and in four credits of Individual Research for completion of the master's degree research paper (SOC 591). Students may take Independent Readings (SOC 596) and approved graduate level courses in other departments (see the Director of Graduate Studies approval) as long as the above requirements are also fulfilled.

Credit Hours per Semester. We require full-time students with full assistantships (i.e., ½ time assistantships) to enroll in a minimum of 8 credit hours per semester. Students with graduate fellowships, Veteran's benefits, or SIUC scholarships also must take at least 9 credit hours as required by the Graduate School. GAs in their final semester of the MA program, who have or will meet all requirements may seek departmental approval to take 6 hours in that final semester.

Master's Research Paper. The research paper is developed from a paper produced in a sociology course or through independent readings/research with a faculty member. Students will select an advisor for the Master's Research Paper (e.g., the person who taught the course or supervised the readings/research project). Students will enroll with this faculty member for 4 semester hours in SOC 591, Individual Research, for the completion of the research paper. These hours should be taken when the student will be doing the most work on the research paper and can be divided across two terms. The selection of the advisor requires paperwork that must be filed with the Director of Graduate Studies. The research paper will then be submitted for evaluation to another faculty member selected in concurrence with the faculty advisor for the paper. In case

of disagreement over the evaluation (pass/revision/fail) of the paper, the graduate studies committee will appoint a third reader. The master's research paper normally is 20 to 40 pages in length and uses the standard American Sociological Review reference style. In addition to the copy required by the Graduate School, one suitably bound copy must be deposited in the department library.

Doctor of Philosophy Degree

Advisement. The responsibility for initial advisement rests with the director of graduate studies. As soon as possible, the student, in consultation with the director of graduate studies, will request an appropriate member of the department's graduate faculty to serve as the student's academic advisor. This advisor will help prepare a general plan of study and will be responsible for making sure that her/his student is enrolled in the correct hours each semester and fulfilling the tool, substantive seminar, and readings requirements. It is the student's responsibility to develop, in consultation with his/her advisor, a plan of study leading to timely completion of the comprehensive examinations and a dissertation (a form is available on our website). This plan of study will be filed in the student's permanent file. Change of advisor should be filed with the Director of Graduate Studies.

Research Tool Requirement. Doctoral students must complete the following courses with grades of A or B: SOC 501, 502, 512, 514, and 526A, 526B, and teaching Sociology seminar SOC 518 (equaling 25 credit hours).

In addition to these courses, students must develop research skills that are appropriate and necessary for their dissertation research (see the next section and the time-lines for additional requirements and clarifications). It is the responsibility of the student's program advisor to supervise the student's development of these research skills.

Course Work and Readings. While in the Ph.D. program, students must take at least five substantive, 500-level, seminars in sociology (15 credit hours; on a case by case basis, permission may be granted for courses in a related discipline) beyond the tool and MA seminar requirements. Ideally the seminars should be taken prior to the substantive examination. In addition to the regularly offered courses and seminars, the department provides supervised readings and research courses, depending upon the availability of faculty members. Supervised readings and research courses are not to be taken as substitutes for regularly scheduled courses and seminars, and registration in them requires prior written approval by the readings faculty on the form granting permission for the course and general approval by the student's advisor. This form must be filed with the Administrative Assistant to the graduate program.

Credit Hours per Semester. We require full-time students with full assistantships (i.e., ½ time assistantships) to enroll in a minimum of 8 credit hours per semester. Students with graduate fellowships, Veteran's benefits, or SIU scholarships also must take at least 9 credit hours as required by the Graduate School.

Comprehensive Examinations. Ph.D. students must pass one written comprehensive exam and one written comprehensive

review paper: the Doctoral Comprehensive Exam which is taken during the second weekend in January of the first year for students with an SIU MA and the second year for others, and the Substantive Comprehensive Review Paper on the student's research field which should be finished within one year (i.e., by the beginning of the spring semester in the student's second or third year as appropriate). Students should form the substantive review paper committee within three months after completion of the Doctoral Comprehensive Exam. Students are advised to complete this paper within a few months if possible.

Doctoral Comprehensive Exam: This examination will be geared towards the demonstration of sociological insights, and its results will be graded by any two faculty members who taught a graduate course or supervised graduate students in the preceding three semesters. Ph.D. students with an SIU M.A. take the exam after their first semester in the Ph.D. program and other after their third semester.

Using an article selected by the examination committee, students will discuss and provide written commentary and critique on key substantive concepts, theories, method, analysis, and sociological insights or contributions in 15 double-spaced typed pages, 12 pt font. Students will be assessed on their ability to clearly and concisely summarize, discuss, and critique the article and provide alternative theoretical and/or methodological arguments. The examination committee will consist of two faculty members who have taught graduate courses and/or supervised graduate students in the previous three semesters. The examiners will be chosen by lottery conducted by Director of Graduate Studies. The examiners will rotate every exam period. The two faculty members will select a sociological article for the exam at least 2-3 days before the exam. Faculty graders will have up to four full regular semester weeks to grade the comprehensive exams. They will grade the exam and report their individual written results in two weeks after-wards to the Director of Graduate Studies. Results will be Pass or Fail and the grade will be used as one aspect of evaluation for continuation in the program.

Annual Faculty Review: All Ph.D. students will compile dossiers that will be used in a full faculty review of on-campus Ph.D. graduate students (including ABDs), with special focus on graduate students in their second and third years of study. The review will occur in late spring. Materials are due February 1. Students must submit a CV, along with a statement of purpose for completing PhD studies.

- Up- to-date curriculum vita: name, address, education, current position, assistantship and work history in department, courses taught, research-paper presentations and publications, professional memberships, and other scholarly activities.
- One page statement of future direction (i.e. research direction(s) with topics, doctoral and substantive comp exam actual or proposed dates and grades, prospectus topic and dates, proposed chair and committee members; if ABD, dissertation topic, date prospectus completed, and proposed date of dissertation completion; chair, committee members.
- For each student, at least one faculty member must agree to supervise the student through the completion of the Ph.D.,

and at least three other faculty members must agree to serve on the student's dissertation committee. This will be done in two separate blind ballots of the full faculty for each non-ABD student. The first ballot will assess willingness to serve as the student's dissertation chair, and the second will assess willingness of faculty to serve on the student's dissertation committee. If a student fails to achieve at least one vote on the first ballot, and at least four votes on the second ballot, they will be terminated from the program. For ABD students, the faculty will review your timely progress towards completion of your dissertation. Failure to make progress may preclude funding.

Substantive Comprehensive Review Paper: The substantive review paper will assess students' ability to think and write critically about a subfield within sociology. Students should select the area on which they will write based on their expected dissertation topic. In so doing, the review paper functions to prepare the student for the dissertation and the review paper committee may function as the basis of the dissertation committee, to which additional members will be added later. Typically the chair of the review paper committee becomes the chair of the dissertation committee. In selecting an area and organizing the relevant literature, students should first identify the area they are interested in studying, clarifying their dissertation research topic, and investigate historical/developmental issues in that area, key theoretical perspectives, early and contemporary debates, and trends indicating the state of the field. Faculty may provide broad orienting questions to help the student engage the literature.

In consultation with the chair, a second faculty member will be identified and invited to join the committee. The student will develop a reading list under the guidance of the committee. Each committee member will have the opportunity to suggest changes to the reading list, however this must be done in time to allow the student to complete the review paper as planned. A final approved reading list must be completed and given to each member of the committee at least one month prior to writing the review paper (the date of which should be agreed upon and deposited with the Graduate Secretary). An ideal time to begin constituting the committee and compiling the reading list is in the spring of the first or second year (after the Doctoral Comprehensive Exam). This process may take as long as the semester, but need not. Students should familiarize themselves with all relevant readings prior to the start of the review paper time period - once the student has read, he/she gives the start date for the writing period to the administrative Assistant. The writing period is 30 days.

Students should write the review paper early enough in a semester to allow faculty four regular semester weeks to grade it before the end of term. Alternatively, students may write it over one month in the summer or winter break and the faculty committee will evaluate the review paper in the first month of the subsequent semester. The review paper should be approximately 40 written pages (exclusive of references). At the end of the month, the review paper should be turned in to the Administrative Assistant who will attach a cover sheet and distribute it to the committee. Completing the paper in the spring or by start of fall in the year after the doctoral exam

is recommended. This timeline is designed to give the student ample time to write and defend a dissertation proposal so that they may be eligible for faculty nomination for the DRA (Doctoral Research Assistantship) in early spring.

Assessment of Substantive Comprehensive Review Paper:

The faculty committee will have up to four regular semester weeks to read, assess, and grade the review paper (faculty are not expected to grade review papers over breaks). The committee members will turn in comments to the Graduate Secretary, who will then give copies to the student. At the discretion of the grading faculty, the student may be asked to defend the review paper orally before a passing grade is awarded. Outcomes include: High Pass, Pass, Revisions, or Fail. A final copy of the approved review paper should be deposited with the Graduate Secretary before the end of the semester.

In the event that revisions are required, the student has one month to complete said revisions and may submit only one set of revisions. If revisions are necessary, committee members will likely meet with the student to offer guidance. If committee members disagree on whether the student has completed a satisfactory paper, a third faculty will grade the review paper. An oral defense of the revised paper may also be required at the faculty's discretion. Students who fail the review paper will be dismissed from the program.

IMPORTANT: Students are also required to demonstrate their mastery of a second area through two or more of the following: taking seminars (eg, earning a certificate and/or emphasis), teaching undergraduate courses, writing for a scholarly audience (presenting and especially publishing) and appropriate demonstration in the dissertation. The chair of the student's dissertation as well as at least one other faculty with expertise in that area may discuss student's competence in this area in a letter of reference.

Dissertation. The dissertation is the single most important requirement for the Ph.D. degree, and the student should start thinking about potential dissertation topics soon after admission. Information concerning Graduate School requirements regarding the dissertation is contained in the Graduate Catalog.

After completing comprehensive examinations, in consultation with the Director of Graduate Studies, the student selects a dissertation chair who must be approved by the Dean of the Graduate School. In consultation with the dissertation chair, the student selects a committee consisting of four additional graduate faculty members, including one from outside of the Department of Sociology. Students selecting the Criminology/Deviance/Criminal Justice option may have committee members from the Department of Criminology and Criminal Justice who serve as either inside or outside members. Exceptions to this committee membership will be granted in only limited circumstances.

Normally, students are encouraged to use the two members of their substantive comprehensive examination committee as the initial members of the dissertation committee. However, students may change the composition of the committee if necessary. First, the student must find a dissertation chair, who must agree to serve and who must also be a member of

the Graduate Faculty. Second, the student must identify the remaining members of the committee. Five committee members are needed, and at least one must be from outside of the Department of Sociology. After discussion with current chair/members and new/potential members, students may reconstitute a dissertation committee prior to the dissertation defense. Notification of the new members and chair is needed in writing to the Director of Graduate Studies.

The student then prepares a detailed dissertation prospectus, showing clearly the purpose and scope of the research, its relation to the previous work in the field, its theoretical relevance and significance, and the research methods and techniques. The prospectus must contain a section documenting the student's training and abilities in using the proposed research methods and techniques. When the prospectus is ready for presentation, the Director of the Graduate program forwards to the Graduate School a dissertation committee roster with the student's dissertation director serving as chair. The dissertation committee will have at least two weeks to read the prospectus before the formal session. During summer months, students should consult with all committee members prior to arranging for any hearings. The prospectus must be approved by the dissertation committee in a formal session and filed with the graduate program secretary. A prospectus must be approved no later than the end of the full-time student's sixth semester in the Ph.D. program for students with an SIU Sociology MA and 8th semester for those with an external MA..

Dissertation Defense. The completed dissertation must be acceptable to the chair of the dissertation committee before being circulated among committee members for evaluation. After acceptance of the dissertation by the candidate's dissertation committee, an oral examination will be conducted by the committee in an open meeting, as specified by Graduate School regulations. This examination will be based upon the contents and implications of the dissertation. The examination should not be scheduled sooner than four weeks after the completed dissertation has been distributed to the dissertation committee. A public announcement and a copy of the dissertation shall be made available to other faculty of the department at least one week before the examination. Upon satisfactory completion of the oral examination, the student must submit two copies of the dissertation to the Graduate School and another copy, suitably bound, must be deposited in the department library.

Crime/Deviance/Criminal Justice Emphasis.

A student who has been admitted to the Ph.D. program in sociology, and whose major interest is in the area of crime, criminology, or criminal justice needs to incorporate the following courses, expectations, and committee guidelines into her/his program of study:

Required Courses:

CCJ 500	Foundations of Criminal Justice
CCJ 504	(Criminological Theory) or SOC 572 (Seminar in Criminology).

Two additional 500-level courses, from the following:

SOC 562	Seminar in the Sociology of Deviance and Social Control
SOC 530	Topical Seminar in Sociology

	(when topic is relevant)
CCJ 540	Seminar in Theory and Practice of Crime Prevention
CCJ 550	Seminar in Juvenile Justice and Delinquency
CCJ 562	Law and Social Control
CCJ 571	Seminar in Punishment and Corrections
CCJ 576	Policy Analysis in CCJ
CCJ 584	Administration and Management in Criminal Justice
CCJ 587	Seminar in Policing
CCJ 592	Advanced Seminar in Criminal Justice and Criminology

Note: ONE of the 4 courses required for the concentration must be a sociology course.

Expectations:

1. Students will complete their Substantive Comprehensive Exam in the area of concentration
2. Students' dissertations will be on a topic related to the area of concentration

Committees:

Students' substantive comprehensive exam committees will have at least one sociology faculty member. Students' dissertation committees will have at least two sociology faculty members who are members of the Graduate Faculty capacities.

Advising:

Prior to the appointment of the dissertation chair, faculty advisors for PhD students should be sociology faculty members.

Certificate in Women, Gender and Sexuality Studies

A student interested in a certificate in Women, Gender and Sexuality Studies (WGSS) should contact the WGSS coordinator and/or cross-listed Sociology faculty for the required courses and guidelines.

See also:

http://cola.siu.edu/wgss/_common/documents/wgss-docs/grad-cert.pdf

M.A. and Ph.D. students who wish to incorporate the certificate requirements into their program of study may do so. Note: ONE of the courses required for the certificate must be a sociology course.

Sociology as a Secondary Emphasis in Another Ph.D. Degree Program

A student who is enrolled in another Ph.D. degree program and who wishes to declare sociology as a secondary area must submit to the director of graduate studies a written request which includes the following: a plan of course work, a personal reading list, and an overall program statement indicating the relationship of the area in sociology to the student's total program.

Interdisciplinary Ph.D. Degree Program in Sociology

Students who have been admitted to the Ph.D. degree program in sociology, and who wish to develop an interdisciplinary program, should review the guidelines set forth by the Graduate School. The Dean of the Graduate School approves inter-disciplinary Ph.D. degree programs only when they bear the endorsement of a department that offers a Ph.D.

degree program. A student who wishes to apply for an interdisciplinary program in which sociology will be the sponsoring department, should understand that the program of study must include substantial involvement in sociology courses and seminars, and that the department may require the student to meet other requirements similar to those established for the Ph.D. degree program in sociology.

Courses (SOC)

406-3 Social Change. Theories and problems of social change; their application, with emphasis on the modern industrial period.

407-3 Sociology of Sexuality. Examines a range of social issues related to human sexuality and the interaction between sexuality and other social processes. Emphasis is on the relevant concepts, theories, and methods in the field of sexual studies, the social and historical construction of sexuality and the ways in which social characteristics shape sexual behaviors and desires, sexual variation, including its causes and consequences, how basic social institutions affect the rules governing sexuality, the major moral and political controversies that surround sexuality, and the "dark side" of sexual life.

415-3 Logic of the Social Sciences. (See PHIL 415.)

423-3 Sociology of Gender. (Same as WGSS 442) Examines social science theory and research on gender issues and contemporary roles of men and women. The impact of gender on social life is examined on the micro level, in work and family roles, in social institutions, and at the global, cross-cultural level.

424-3 Social Movements and Collective Behavior. An analysis of social behavior in noninstitutional settings such as crowds, disasters, riots, mass panics, crazes, cults, and social movements. Emphasis is on the cultural and structural factors leading to collective action and its impact on social change.

426-3 Social Factors in Personality and Behavior. (Same as PSYC 464) Advanced study of social psychology from both sociological and psychological perspectives. Analyzes the reciprocal influence of groups and individuals, including the development of self, social interaction, gender and ethnic relations, impression management, interpersonal attraction, and social influence.

435-3 Social Inequality. Discussion of theories and evidence pertaining to the socio-structural causes and consequences of inequality based on social class, prestige, power, gender, wealth and income.

437-3 Sociology of Globalization and Development. Survey of sociological theories and research on globalization and development: modernization, dependency, world-system, and global economy. Problem areas include population growth and control, economic growth and underdevelopment, role of state, transnational corporations, financial institutions, and organizations, non-governmental organizations, work, population, migration, social movements and resistance, gender, race-ethnic, class, and sexuality issues.

438-3 Sociology of Ethnic Relations in World Perspective. Examines theories, concepts and research on the structure of ethnic relations and ethnic problems in contemporary societies in major world regions. Assimilationist, pluralist, secessionist, and militant types of ethnic and racial group relations are covered in selected societies. De-signed for students with advanced interest in comparative ethnic relations. Prerequisite:

SOC 215 is recommended.

455-3 Racial Inequality. This course is an introductory survey on the sociology of Racial Inequality. As such, the basic objective of this course is to give students a broad understanding of race and inequality issues in society. This course will require students to become familiar with the critical frameworks and concepts through which social scientists make sense of racial inequality; to come to terms with the ideological, political, and economic mechanisms that perpetuate racist structures; to study the past and present historical contexts within which racial inequality is given shape; and to explore potential venues for change.

460-3 Sociology of Medicine. Analyzes the social structures and issues involved in health, illness, and health-care delivery systems in the United States. Explores the economic and political influences on the role of medicine in society, as well as the organization of medical care and health institutions. Critically examines the social processes and factors that influence health and illness behavior.

461-3 Women, Crime and Justice. (Same as CCJ 460 and WGSS 476) A study of women as offenders, as victims, and as workers in the criminal justice system.

462-3 Victims of Crime. (Same as CCJ 462) An examination of the extent and nature of victimization, theories about the causes of victimization, the effects of crime on victims and services available to deal with those effects, victims' experiences in the criminal justice system, the victims' rights movement and alternative ways of defining and responding to victimization.

465-3 History of Sexuality. (Same as HIST 465) Comprehensive survey of sexuality from the early modern period to the present. Examines social trends, politics, and cultural debates over various forms of sexuality. Students will engage in discussion, research, and writing. Emphasis varies by instructor.

471-3 Introduction to Social Demography. Survey of concepts, theories, and techniques of population analysis; contemporary trends and patterns in composition, growth, fertility, mortality and migration. Emphasis is on relationship between population and social, economic, and political factors.

473-3 Juvenile Delinquency. (Same as CCJ 473) An in-depth study of theories of delinquency, analytical skills useful in studying delinquent offenders, systematic assessment of efforts at prevention, and control and rehabilitation in light of theoretical perspectives. Six hours of social/behavioral science recommended.

474-3 Sociology of Education. Methods, principles and data of sociology applied to the educational situation; relation of education to other institutions and groups.

475-3 Political Sociology. (Same as POLS 419) An examination of the social bases of power and politics, including attention to global and societal political relations, as well as individual-level political beliefs and commitments; primary focus on American politics.

476-3 Religion and Politics. (Same as POLS 476) Examines the connection between religious beliefs and institutions and political beliefs and institutions. Comparative studies will focus on religious political movements in the United States and throughout the world.

490-3 to 12 (3,3,3,3) Special Topics in Sociology. Varying advanced sociological topics selected by the instructor for study in depth. May be repeated for a maximum of twelve semester

hours provided registrations cover different topics. Topics announced in advance.

496-3 Advanced Special Topics in Sexual Diversity Studies. Advanced consideration of a topic of interest in Sexual Diversity Studies not offered through regular course listings.

497-3 Independent Study in Sexual Diversity. Supervised readings in selected content areas in Sexual Diversity Studies. This is a capstone, synthesizing experience for students in sexual diversity studies. Prerequisites: WGSS 201, 203. Special approval needed from the instructor.

501-3 Classical Sociological Theory. A systematic survey of sociological theory with the focus on 19th and early 20th-century sociological thought. An in-depth examination of a selected number of thinkers whose work laid the foundation for major schools of contemporary sociology. Students are expected to be familiar with the fundamentals of sociological analysis.

502-3 Contemporary Sociological Theory. A survey of major 20th-century theoretical orientations in sociology with emphasis on their differing modes of conceptualization and alternative research programs. Students are expected to be familiar with the classics of sociological thought.

506-3 Seminar on Contemporary Sociological Theory. Recent trends in sociological theory; current approaches to the construction and application of theoretical models and their relations to empirical research. Prerequisite: SOC 501 or consent of instructor.

512-4 Sociological Research Methods and Design. Sociological research methods and design. Focus on research process: identification of the role of theory, formulation of research questions, research design and quantitative, qualitative, and mixed method data collection techniques. Connections between theory, research design and measurement decisions, and interpretation (answering research questions) are emphasized throughout. Includes practical and ethical issues, e.g. informed consent.

514-4 Qualitative Methodology. Focus on research strategies involving the systematic exploration, documentation and analytic description of social settings, interactions, meanings, lifeworlds and texts. Includes discussion of field observation, depth interviewing, oral histories/narratives, case studies, biographies and life histories, focus group interviewing, content analysis of written and visual data, historical/archival investigations, among other approaches.

518-3 Teaching Sociology. Emphasis is on the development of teaching skills and pedagogical knowledge for instructors in sociology.

521-3 Seminar in Social Psychology. In-depth examination of specific theoretical systems or substantive problems in social psychology. Students wishing specific information on the topic of the seminar should consult with the instructor for more detail. Prerequisite: SOC 426 or consent of instructor.

526A-4 Statistical Data Analysis in Sociology I. Provides a foundation in univariate and bivariate descriptive statistics, inferential statistics including hypothesis testing about population parameters and bivariate and multivariate relationships and measures of association for nominal, ordinal and interval-ratio variables, and an introduction to bivariate and multivariate correlation and linear regression (including concepts of causal modeling and control variables). Restricted to graduate standing.

526B-4 Statistical Data Analysis in Sociology II. Provides in-depth instruction in multiple regression including assumptions of linear model, diagnostics and corrections for violation, exploratory factor analysis, using categorical dependent variables (logistic and multinomial regression), nonlinear relationships, interactions, and extensions to advanced techniques as time allows. Prerequisite: SOC 526A (or successful pass of proficiency test).

530-2 to 12 (2 to 4 per topic) Topical Seminar in Sociology. Content varies with interests of instructor and students. Special approval needed from the instructor.

533-3 Seminar in Social Stratification. Comparative study of power, social class, and status; conceptions of social structure and measurement techniques; explanations of social and occupational mobility; institutions and differential life-changes.

534-3 Seminar in Globalization and Social Change. Overview of prevailing theories, research, methods, and analysis in globalization and social change. These include socio-economic changes in capitalism and development, emergence of global social change agents: transnational corporations, financial institutions, and organizations, non-governmental organizations; informalization of work, population, migration, social and revolutionary movements, gender, race-ethnic, class, and sexuality.

539-3 Seminar in Complex Organizations. Overview of theories, research, and prevailing issues of complex organizations. These will include the power structure of the business community, emergence and structure of bureaucratic organizations, bases of authority, systems of formal and informal relations, unanticipated consequences of organizational structure, labor relations, total institutions and social movements as organizations.

542-3 Seminar on the Family. Overview of the theoretical approaches, substantive issues, and techniques of research and measurement in the study of American family life. Approaches include structural-functionalism, conflict theory, and the feminist critique. Among the substantive topics are family roles and relationships, kinship, relationships of the family to other institutions and family change.

543-3 Seminar on Comparative Family Systems. Analysis of cross-cultural and historical variation in family structure. Methods and sources of information for research on family structure.

544-3 Sociology of Gender. (Same as WGSS 544) Examines major theories, themes, and research methods on the intersection of gender, race, class, and sexuality. Topics may include: construction of gender, race, class and sexual identities; work; social movements; intersection of family and work; parenting and reproduction; historical and cross-national dimensions.

545-3 Gender and Work. This course is designed to investigate how gender structures the workplace, as well as how men and women both reproduce and negotiate gender at work. Focusing on select topics, we will develop an understanding of workplaces as gendered organizations and discuss sex segregation, wage inequality, the glass ceiling, the glass escalator, sex work, men and women in nontraditional occupations, the body at work, emotional labor, aesthetic labor, immigration and work, globalization, and unemployment and welfare. Also, this class will take an intersectional approach to analyzing and discussing issues of gender inequality at work; meaning, we will take seriously how gender intersects with race, ethnicity, class and sexuality to shape both inequality and resistance at work.

546-3 Language, Gender and Sexuality: Anthropological

Approaches. This course examines the study of language in society with a particular focus on how linguistic practices are part of the construction of gender, race, class and sexual identities, ideologies, social categories and discourses. Anthropological theories applies to the study of language, gender and sexuality will be covered along with a variety of methodological approaches.

550-3 Seminar in Social Problems. Theoretical perspectives and empirical findings on the emergence and evolution of social problems. Examination of institutional responses and formation of social policy.

551-3 Sociology of Religion. Theoretical and empirical study of the origin, location and function of religious ideas and institutions in society.

552-3 Seminar in Race and Ethnic Relations. Overview of theories, research and prevailing issues of race and ethnic relations in contemporary societies. Discussions will include world expansion during colonialism, political economy of minority groups, and class and gender issues in global development.

555-3 Social Movements and Collective Action. A seminar designed to survey the major sociological approaches to social movements and collective action. Emphasis will be on movement culture, social movement organizations and the social environment in which collective action occurs.

557-3 Revolutions and Radical Social Change. This course is designed to explore the ways in which revolutions have been theorized. It sets out to study Classical (Chinese, French, and Russian) and Modern (Cuban, Mexican, Iranian, and other Third World) historical cases, as well as contemporary popular uprisings. This course will require students to become familiar with the structural causes of revolution; the cultural and ideological roots of revolutionary mobilization; the emotional, gendered, and storytelling dimensions of revolution-making; and the relationship between globalization and more contemporary attempts at Radical Social Change.

562-3 Seminar in the Sociology of Deviance and Social Control. Critical analysis of sociological theories and methods used in the study of social deviance and control. Examination of social deviance such as suicide, mental illness, sexual variance, drug use and alcoholism.

572-3 Seminar in Criminology. A survey of classical and contemporary theoretical perspectives related to crime and justice.

591-1 to 4 Individual Research—Supervised Research Projects. Open to graduate students with a major in sociology. Graded *S/U* only. Special approval needed from the instructor and departmental director of graduate studies.

596-1 to 4 Readings in Sociology Supervised readings in selected subjects. Graded *S/U* only. Special approval needed from the instructor and departmental Director of Graduate Studies.

600-1 to 32 (1 to 16 per semester) Dissertation. Special approval needed from the chair.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Special Education

<http://www.epse.siu.edu/>
prell@siu.edu

COLLEGE OF EDUCATION AND HUMAN SERVICES

Graduate Faculty:

Anastasiou, Dimitris, Assistant Professor, Ph.D., National and Kapodistrian University of Athens, 2004.

Bates, Paul, Professor, Ph.D., *Emeritus*, University of Wisconsin, 1978; 1978.

Bruns, Deborah A., Professor, Ph.D., University of Illinois-Urbana Champaign, 2000; 2003.

Crowner, James, Professor, *Emeritus*, Ph.D., Michigan State University, 1960; 1966.

Ewing, Norma J., Associate Professor, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1974; 1973.

Hisama, Toshiaki, Associate Professor, *Emeritus*, Ph.D., University of Oregon, 1971; 1971.

Juul, Kristen, Professor, *Emeritus*, Ph.D., Wayne State University, 1953; 1970.

May, Michael E., Associate Professor, Ph.D., Vanderbilt University, 2007; 2007.

Miller, Sidney, Professor, *Emeritus*, Ph.D., Pennsylvania State University, 1974; 1978.

Mundschenk, Nancy A., Associate Professor, Ph.D., University of Iowa, 1992; 1992.

The Department of Counseling, Quantitative Methods, and Special Education offers programs leading to degrees of: Master of Science in Education with a Major in Special Education; and a Doctor of Philosophy with a Major in Education and Concentration in Special Education.

Master of Science in Education degree

The faculty, staff and students in the special education program are committed to making a positive difference in the lives of students with disabilities and their families by increasing their success in school, work, community, and living environments. The graduate plan of study in special education is designed to enhance the applicant's experiences and expertise through academic study, research, and clinical opportunities.

Applicants for the Master of Science in Education degree in special education must meet the criteria for admission to the Graduate School. In addition, candidates must submit a department application form, a letter of application, all undergraduate and graduate transcripts, and two letters of reference to the department. The Special Education Graduate Committee will evaluate the application materials and make appropriate recommendations for acceptance or rejection of admission to the program. It is the responsibility of the committee to exercise professional judgment related to the criteria that applicants must meet in order to be considered for admission to the program. Students will be informed in writing of the Special Education Graduate Committee's decision. Upon admission to the program, the student will be assigned an adviser with whom he/she will design a Graduate Degree Plan.

Masters Program Admission Criteria. Admission to the Masters

Program in Special Education will be based upon the following criteria:

1. A baccalaureate degree in special education, elementary education, secondary education or a related field such as social work or psychology.
2. Undergraduate grade point of 2.75 or higher on a 4.0 scale.
3. A minimum of two letters of recommendation, which on the whole, clearly attest to the professional dispositions of a special education professional as articulated in the CEC Code of Ethics and Standards for Professional Practice, and predict academic success at the graduate level.
4. A letter of application (approximately 400 words) in which the applicant summarizes his/her professional goals, career objectives, research interests, motivation for graduate work and other pertinent information.
5. Departmental application form.

All application requirements must be completed before consideration of an applicant for admission. The Graduate Committee evaluates the credentials of each applicant. When an application file is complete, it will be referred to the Graduate Committee to review at their next scheduled meeting. Students may be required to complete an interview with the Special Education faculty.

The Master of Science in Education degree in Special Education requires a minimum of 30 semester hours. Program requirements include the following courses: SPED 500-3 (Research Issues in Special Education), SPED 578-3 (Legal Framework for Special Education), and SPED 599A -1-6 (Thesis) or SPED 599B-1-6 (Research Paper). In addition to the nine hours of required coursework, Masters candidates will be required to select one of three emphasis areas: Early Childhood Special Education, Behavior Emphasis, Curriculum Emphasis.

The following courses are required for each of the emphasis areas:

EARLY CHILDHOOD SPECIAL EDUCATION EMPHASIS

Program Requirements

- | | |
|-------------|---------------------------------------|
| SPED 500-3 | Research Issues in Special Education |
| SPED 578-3 | Legal Framework for Special Education |
| SPED 599A-3 | Thesis or SPED 599B-3 Research Paper |

Emphasis Requirements

- | | |
|-------------|---|
| SPED 515-3 | Collaboration-Based Delivery Systems in Special Education |
| SPED 550-3 | Behavior Management of Exceptional Children and Youth |
| SPED 505-3 | Organizing and Implementing Early Childhood Special Education Programs |
| SPED 512-3 | Advanced Child and Family Assessment, Curriculum Methods and Evaluation |
| SPED 594D-3 | Practicum-Early Childhood Special Education |

Electives

6 hours of approved graduate level coursework

Total Hours: 30 credit hours

Applicants who hold an Illinois Learning Behavior Specialist I teaching certificate and who are seeking professional

advancement in one or more of the following areas: Behavior Emphasis or Curriculum Emphasis. These specializations do NOT lead to LBS II certification.

BEHAVIOR EMPHASIS

Program Requirements

- SPED 500-3 Research Issues in Special Education
- SPED 578-3 Legal Framework for Special Education
- SPED 599A-3 Thesis or SPED 599B-3 Research Paper

Emphasis Requirements

- REHB 503-3 Basic Behavior Analysis
- SPED 517-3 Systems of Care for Exceptional Children and Youth
- SPED 550-3 Behavior Management of Exceptional Children and Youth
- SPED 501-3 Methods and Materials for Persons with Severe Behavior Challenges
- SPED 594A-3 Practicum in Special Education-Behavior Interventions

Electives

6 hours of approved graduate level coursework

Total Hours: 30 credit hours

CURRICULUM EMPHASIS

Program Requirements:

- SPED 500-3 Research Issues in Special Education
- SPED 578-3 Legal Framework for Special Education
- SPED 599A-3 Thesis or SPED 599B-3 Research Paper

Emphasis Requirements

- SPED 515-3 Collaborative Based Delivery Systems in Special Education
- SPED 511A-3 Advanced Instructional Design and Methodology for Students with Disabilities
- SPED 511B-3 Curriculum for Instructional Remediation of Learners with Disabilities
- SPED 516-3 Advanced Assessment for Diverse Learners
- SPED 594B-3 Practicum in Special Education-Curriculum Adaptation

Electives

6 hours of approved graduate level coursework

Total Hours: 30 credit hours

Retention Criteria

For a student to be retained in the Masters program, students must complete all coursework with minimum grade of *B* and demonstrate acceptable professional behaviors which the faculty deem essential for competent and effective educators, and which are articulated in the Council for Exceptional Children Code of Ethics and Standards for Professional Practice for Special Educators.

Application Procedures

Applicants must submit all of the following items to be considered for admission to the Master's program in Special Education

1. **Graduate School Application.**
2. **Official Transcripts.** Official transcripts of all previous

undergraduate and graduate college work at institutions other than SIU should be sent directly to the Graduate Secretary, Department of Counseling, Quantitative Methods, and Special Education, Southern Illinois University at Carbondale, Carbondale, IL 62901-4618.

3. Department Application Form. This form includes pertinent biographical information and professional experience. Applicants are requested to indicate their desired course of study and certificates (e.g., Early Childhood Special Education approval).

4. Letter of Application (approximately 400 words) in which the applicant summarizes professional goals, including career objectives, research interests, motivation for graduate work, and other pertinent information.

5. Letter of Recommendation. Applicants must submit at least two letters of reference which attest to your professional competence, academic preparation, and potential for graduate work. Ideally, one letter should be from a college or university professor who can discuss your academic abilities, and one should be from an administrator or colleague who can authoritatively describe your professional experience and potential.

6. Application Fee. A non-refundable application fee of \$65.00 must be submitted with the application. Attach your check or money order, payable to Southern Illinois University, to the top of the application form. Do not send cash. Only checks or money orders payable to United States banks will be accepted.

7. Optional Materials. Applicants are free to submit other materials which will substantiate your qualifications for admission for graduate study.

Doctor of Philosophy Degree in Education

The Department of Counseling, Quantitative Methods, and Special Education offers a program leading to a Doctor of Philosophy degree with a Major in Education and Concentration in Special Education. See the description of the Ph.D. degree major in education.

Courses (SPED)

403-3 Characteristics of Children and Youth Labeled Gifted. Designed to help teachers in the identification of and programming for children labeled gifted and talented. Prerequisite: SPED 300 or concurrent enrollment or consent of department chair.

405-3 Introduction to Early Childhood Special Education Methods: Infants, Toddlers and Preschoolers with Special Needs. This course focuses on effective methods, materials and programs for infants, toddlers, and preschoolers with special needs, including IEPs, IFSPs, working with families, service delivery, case-management, transition planning, and curriculum methods and procedures. Prerequisite: SPED 412 or consent of instructor.

408-3 Characteristics and Methods for Teaching Exceptional Children. (Same as EDUC 308) For pre-service teachers who serve children and youth with disabilities. The course focuses on essential disability characteristics, data-based decision-making, scientifically-based academic and behavioral

interventions and strategies to differentiate instruction and accommodate learners with disabilities in general education classrooms. Prerequisites: EDUC 313, EDUC 314.

409-1 to 6 Cross-Cultural Studies. Seminar and/or directed independent study concerned with socio-cultural variables affecting the educational needs of children and youth with a disability. Prerequisite: SPED 300 or consent of instructor and department chair.

410-3 Characteristics of Students with Learning Disabilities, Emotional/Behavior Disorders, and Mental Retardation.

This course presents the behavioral, emotional, physical and learning characteristics of children and youth labeled learning disabilities, emotional/behavior disorders or mental retardation. Screening, identification, placement, instructional practices, classroom management and use of related services will be examined. Prerequisite: SPED 300 or 420, or concurrent enrollment.

411-3 Assessment in Special Education. Course covers general assessment information, norm reference testing, curriculum based assessment, adaptive behavior scales and issues relating to cultural diversity. Laboratory fee: \$15. Prerequisite: SPED 300 or 420, 410, or concurrent enrollment.

412-3 Introduction to Assessment and Curriculum Methods in Early Childhood Special Education. This course presents an introduction to child and family assessment and the development of child and family goals in early childhood special education. Topics will include types of assessment commonly used, rationale for assessment, methods of assessment, reporting assessment results, writing child and family goals. A fee for testing materials is required. Lab fee: \$15. Prerequisite: SPED 300 or 420, concurrent enrollment or consent of instructor.

417-3 Behavior Management for Children and Youth with Disabilities. The course focuses on the implementation of behavior management strategies and tactics to be used with students with disabilities in a variety of educational environments. Prerequisite: SPED 300 or 420, 410, 411, 423 and must be admitted to the TEP as a special education major, or consent of instructor.

418-3 Methods and Materials for Teaching a Functional Curriculum. This course covers the principles of curriculum construction, program development and evaluation, classroom organization, instructional approaches, strategies and materials for teaching a functional curriculum. Prerequisite: SPED 300 or 420, 410, and 423, and must be admitted to TEP as a special education major or consent of instructor.

419-3 Academic Methods and Materials for Students with Disabilities. This course covers the academic methods, materials and strategies used with students with disabilities receiving special education services in school and community settings. Prerequisite: SPED 300 or 420, 410, 411, 423 and must be admitted to TEP as a special education major.

420-3 Advanced Theories and Practices in Special Education. The course is an advanced survey of exceptional populations and addresses educational, social, legal, cultural and community practices associated with individuals with disabilities, ages 0 – 21 years old.

422-3 Teaching Reading in the Elementary School. (Same as CI 422) Examination of the reading process with emphasis on the factors and conditions that affect reading. Emphasis on the

formulation of a philosophy of reading in relation to methods, materials, procedures, and evaluation. Prerequisite: Dual Special Education- Elementary Education majors – grade of C or better in CI 321 and 435 and EDUC 313; Special Education majors; EDUC 313. Concurrent enrollment with EDUC 322.

423-3 General Procedures in Special Education. Presents key provisions of Public Law 94-142 and subsequent amendments, including Individualized Education Programs (IEPs). Course content also includes principles of applied behavior analysis and effective instruction of students with disabilities. Prerequisite: SPED 300 or 420, 410, 411 or concurrent enrollment.

425-3 Home-School Coordination in Special Education. The course covers techniques used in parent interviews, conferences and referrals by school personnel; due process and procedural safeguards for parents and youth with disabilities. Restricted to: Admittance to the TEP as a special education major, or consent of instructor.

430-3 Secondary Programming for Students with Disabilities. Deals with modifications of and additions to school programs to ensure that they are appropriate to the needs of adolescents with disabilities. Content includes coverage of remedial and compensatory program models, transition programming, career and vocational education. Prerequisite: SPED 300 or 420, 410, 411 and must be admitted to the Teacher Education Program as a special education major or consent of instructor.

431-3 Work-Study Programs for Adolescents Labeled Severely Disabled. This course is designed to prepare educators and other human service professionals to assist adolescents and young adults with severe disabilities for community integrated employment options. Content will include community-referenced curriculum objectives, community-based instruction for employment and functional skill development.

494A-1 Practicum in Special Education-Assessment. This course includes experiences in public school and community settings in the selection, administration and interpretation of norm-referencing and curriculum-based assessments, adaptive behavior scales, behavior rating scales and checklists and issues relating to cultural diversity. Prerequisite: SPED 300 or 420 and 410 with a grade of C or better.

494B-1 Practicum in Special Education-Functional Curriculum. This course includes clinical experiences in public school and community settings in planning, implementing and instructing a functional curriculum. Prerequisite: SPED 300 or 420, 410, 411, 423 and must be admitted to Teacher Education Program.

495-1 to 6 Internship in Special Education. An applied experience for students seeking certification in special education through alternative or subsequent certificate routes. Students will be required to complete a set of activities and prepare a number of products appropriate for the special education program and/or students with disabilities being served in the internship placement. Students will be expected to complete a portfolio of products to demonstrate professional competence. Special approval needed from Program Coordinator.

500-3 Research Issues in Special Education. Students will study issues and research practices in special education and will learn how they both conduct research, translate research findings and develop practices in special education based on research outcomes. Special approval needed from the instructor.

501-3 Methods and Materials for Persons with Severe Behavior

Challenges. Deals with methods, materials and instructional management practices common to the instruction and management of student experiencing severe behavioral challenges in the schools and in residential settings.

503-3 Educational Program Delivery for Gifted and Talented Students. Planning implementation and evaluation of differential educational programs for gifted and talented students. Reviews historical through modern day approaches to the systematic delivery of educational services to exceptional populations. Evaluation methods for the expansion and refinement of gifted programming are planned. Prerequisite: SPED 403.

505-3 Organizing and Implementing Early Childhood Special Education Programs. This course presents theoretical frameworks and current best practices involved in the development, implementation and evaluation of Early Childhood Special Education programs. Content will include discussion of models of teaming, ethical issues, interagency coordination, transition, mentoring and supervision. Prerequisite: SPED 300 or 420, 412, and 405.

511A-3 Advanced Instructional Design and Methodology for Students. Advanced study of evidence-based practices related to the development and delivery of effective educational programs for students with mild disabilities. Emphases will include instructional design, instructional strategies and techniques, include the use of technology to meet educational needs of students with mild disabilities.

511B-3 Curriculum for Instructional Remediation of Learners with Disabilities. Advanced study of curriculum and curricular approaches to meeting the educational needs of students with mild disabilities in special education and general education classrooms. Emphasis include academic and functional curriculum for basic skills and content areas, direct instruction and curriculum modifications and adaptations.

512-3 Advanced Child and Family Assessment, Curriculum Methods and Evaluation in Early Childhood Special Education. This course presents advanced coursework and practical experiences in child and family assessment, selection of curricula, and evaluation in Early Childhood Special Education. Students will review current assessment and curricula packages, conduct evaluations and write assessment reports. Practical experience will be an integral part of this course. Prerequisite: SPED 300 or 420, 405 and 412.

513-3 Organization, Administration, and Supervision in Special Education. Emphasis upon the functions, underlying principles and cautions to be observed in the organization and administration of special education. The selecting and training of teachers, problems of supervision, special equipment, transportation, cooperating agencies and legal aspects of the problem. Prerequisite: SPED 300 or 420. Special approval needed from program coordinator.

514-3 Simulation of Administrative Tasks in Special Education. Development of skills required of special education administrators and supervisors through the use of simulation materials focusing on developing administrative skills. Prerequisite: SPED 300 or 420. Special approval needed from program coordinator.

515-3 Collaboration-Based Delivery Systems in Special Education. Designed to provide students with a thorough knowledge and skill base in the collaboration process including problem-solving processes, communication skills and conflict resolution skills. Collaboration-based approaches will be examined

as alternative systems and methods of meeting the educational needs of students with disabilities within a continuum of special education services.

516-3 Advanced Assessment for Diverse Learners. Develop practitioner's knowledge and skills to develop and implement standardized and informal assessment systems to guide program planning and instructional decision-making for students with disabilities in regular and special education programs. Furthermore, practitioners will identify, utilize, and implement modifications and accommodations to facilitate students' performance on informal and standardized assessment tools. Prerequisite: 411 or consent of instructor.

517-3 Systems of Care for Exceptional Children and Youth. Survey and examination of social agencies and models of service delivery contributing to the welfare and care of exceptional children and youth. Emphasis will be given to models, services, and organization of system of care serving youth with disabilities.

518-1 to 6 Workshop in Special Education. Topical workshops centered on current practices and new developments in special education. Designed to promote better understanding of the psychological and educational problems of exceptional children. Open to graduate students majoring in education and related fields. Special approval needed from the instructor and department chair.

519-3 Career Development Opportunities for Educationally Handicapped Youth. This course is designed to prepare special educators to understand the career needs of the educationally handicapped youth and the procedures for developing appropriate career services for such students. Prerequisite: 430.

550-3 Behavior Management of Exceptional Children and Youth. This course deals with assessment, implementation, and monitoring procedures involved with the use of behavior change techniques in special education programming. Emphasis will be placed on the actual implementation of behavior change techniques with school aged students with disabilities. Special approval needed from the instructor.

560-2 Inservice Delivery. Covers theoretical and practical aspects of inservice delivery/staff development. Special focus on organizing inservice programs, delivery techniques, consultative skills development, select inservice models, needs assessment and evaluative techniques.

578-3 Legal Framework for Special Education Services. Covers state and federal statutes and regulations including IDEA, Section 504: The Rehabilitation Act of 1973, and No Child Left Behind Act, as well as current legislation and litigation with respect to provision of educational services for children and youth/young adults with disabilities. Prerequisite: SPED 300 or 420 or consent of instructor.

580-3 Master's Seminar: Issues and Trends in Special Education. Analysis of research, trends, and programs in the education of children with disabilities. Open to graduate students in special education or related field. Prerequisite: SPED 300 or 420.

582-3 Post-Master's Seminar: Theories and Models in Special Education. Critical discussion of eight major intervention models used historically and currently with handicapped children in educational settings. Special approval needed from the instructor.

583-3 Post-Master's Seminar: Program Coordination in Special Education. Analysis of organizational principles and practices required for the creation and maintenance of programs to meet the needs of persons who are handicapped and require specialized

educational programs within the school setting. Special approval needed from the instructor.

584-3 Issues in International Special Education. This course is designed to examine major aspects of disability theory and issues in international special and inclusive education. It provides current knowledge on disability models, as well as on special education systems world-wide; it examines historical patterns, the international human rights law and country legislation, cultural issues and intervention practices related to special education; it reviews major concepts, issues and debates in the international field of special education.

585-3 Doctoral Seminar: Evaluation in Special Education. An analysis of the purposes, approaches, design, methodology and applications of evaluative studies in special education. Prerequisite: SPED 582, SPED 583.

586-1 to 4 (1,1,1,1) Proseminar in Special Education. A topical seminar providing for the systematic discussion of current research in the field of special education. Specific content is determined by participating faculty and students, relative to current faculty research and dissertations in progress within the department. Doctoral students will register for a total of four credit hours, one per semester, after which they will audit the course during the pursuit of their dissertation. Master's students admitted with consent of adviser and department chair.

590-1 to 6 Readings in Special Education. Study of a highly specific problem area in the education of exceptional children. Open only to graduate students. Graded *S/U* only. Prerequisite: SPED 300 or 420. Special approval needed from the instructor.

591-1 to 6 Independent Investigation. A field study for graduate students. Conducted in a school system where full cooperation is extended. The study will involve selection of a problem, surveying pertinent literature, development of experimental design and procedures, recording results and appropriate interpretations and summaries. Special approval needed from the instructor.

594-1 to 6 Practicum in Special Education. A capstone field-based experience for special educators seeking advanced preparation in the field of special education. Practicum experience include (a) behavior interventions, (b) curriculum adaptation, (c) multiple disabilities, (d) early childhood special education, (e) supervision. Student will select the appropriate practicum experience as appropriate for his/her program of study or Learning Behavior Specialist II certification.

595-1 to 12 (1 to 6) Internship. The doctoral internship is a required experience. Internship hours do not apply to minimum needed for graduation. Each student shall engage in specialized service areas within a school system, university, state office, federal office, or private agency. Internship assignments include: (a) Research and applied studies; (b) Evaluation; (c) Administration; (d) University teaching; (e) Program planning and management; (f) Supervision; and (g) Specialized delivery systems. Interns will participate in regularly scheduled on-campus or on-site seminars with the university and field internship supervisors.

599A-1 to 6 Thesis. Independent hours to be taken under the supervision of the student's Master's degree chair for the purpose of conducting and writing the Master's thesis. Graded *S/U* only. Special approval needed from the instructor.

599B-1 to 6 Research Paper. Independent hours to be taken under the supervision of the student's Master degree chair for the purpose of conducting and writing the Master's research paper. Graded

S/U only. Special approval needed from the instructor.

600-1 to 32 (1 to 12 per semester) Dissertation. Special approval needed from the chair.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Speech Communication

(See Communication Studies for program description)

Supply Chain Management and Engineering

COLLEGE OF BUSINESS AND COLLEGE OF ENGINEERING

The graduate faculty members of the Supply Chain Management and Engineering program, consisting of members of the College of Business and the College of Engineering, offer joint graduate work leading to the Master of Science in Supply Chain Management and Engineering.

College of Business Graduate Faculty Members:

Burnett, Royce D., Associate Professor of Accounting, C.P.A., Ph.D., Oklahoma State University, 2003; 2009. Cost and Managerial Accounting.

DeYong, Gregory D., Assistant Professor of Management, Ph.D., Indiana State University, 2010; 2013. Inventory Management, Production Scheduling, and Supply Chain Management.

Goodale, John C., Associate Professor of Management, Ph.D., University of Utah, 1996; 2009. Workforce Scheduling and Service Supply Chains.

Pearson, John M., Professor of Management, Ph.D., Mississippi State University, 1991; 2001. Management Information Systems and Internet Technology. .

College of Engineering Graduate Faculty Members:

Chang, Feng-Chang (Roger), Associate Professor of Industrial Management and Applied Engineering, Ph.D., Ohio State University 1985; 1991. Manufacturing Systems, Quality Management, and Supply Chain Management.

DeRuntz, Bruce D., Professor of Industrial Management and Applied Engineering, Ph.D., Southern Illinois University, 2005; 2005. Project Management and Quality Management.

Dunston, Julie K., Associate Professor of Industrial Management and Applied Engineering, Ph.D., Florida State University, 1995; 1995. Manufacturing Processes Quality Management, and Control Systems.

Velasco, Thomas, Associate Professor of Industrial Management and Applied Engineering, Ph.D., University of Arkansas, 1991; 1993. Industrial Engineering, Quality Management and Supply Chain Management.

Master of Science in Supply Chain Management and Engineering

The Master of Science in Supply Chain Management and Engineering Program is an online program oriented toward developing the technical and managerial knowledge of current and future supply chain professionals. The program emphasizes a holistic approach to designing and managing supply chains.

The Program takes advantage of the resources and technology of the College of Business and the College of Engineering in a joint venture that produces graduates with technical skills that prepare them for supply chain leadership positions in industry and government.

Program Description

Collaborative supply networks are critical for purchasing, transferring, and distributing material in an increasingly global economy where outsourcing is an important strategic practice in today's firm. In addition, supply chain and logistics costs are a significant portion of operating expenses for today's production and service organizations. Consequently, organizations can seize a large opportunity to impact supply chains that take advantage of leading-edge technical developments in supply chain design, analytics and quality. The Master of Science in Supply Chain Management and Engineering's technical focus will allow uniquely qualified graduates to have immediate value in analyst, purchasing, operations, and consulting positions.

The College of Business and the College of Engineering offer state-of-the-art online programming. The faculty and staff in both colleges are uniquely positioned to deliver this curriculum, which will help engineers and managers gain a competitive advantage in today's employment market for supply chain and logistics managers. This online program has a focus on Supply Chain Management (Management) and Quality (Engineering) that is consistent with challenges and opportunities that managers will experience in organizations today.

Proposed Curriculum

The Master of Science in Supply Chain Management and Engineering Program requires 36 credit hours over four semesters, including a summer term. Semesters are divided into eight-week blocks. Students will take two three-credit courses the first eight-week block of each semester, and then take one three-credit course in the second eight-week block. The Program is delivered in an asynchronous online format.

Course Requirements

36 Total semester hours (3 hours/course) after satisfying the MBA and Industrial Technology foundation requirements with prerequisites.

The twelve required courses are:

BA 512	Supply Chain Cost Accounting
BA 523	Innovation and Supply Chains
BA 541	Analytic Methods for Supply Chain Management
BA 544	Advanced Production Planning and Inventory Management
BA 553	Supply Markets and Negotiation
BA 565	Managing Supply Chain Information
QEM 546	Project Management for Supply Chain Engineering
QEM 560	Supply Chain Engineering
QEM 562	Transportation and Logistics Systems
QEM 564	Facilities and Location Planning
QEM 583	Analysis of Statistical Quality Data
QEM 585	Advanced Data Analysis & Design of Experiments

Admission Requirements

Prospective degree candidates are expected to demonstrate a readiness for graduate study and an aptitude for successful performance in graduate level work. Admission to the program is based on the applicant's undergraduate record, a satisfactory score on the Graduate Management Admission Test (GMAT) or Graduate Record Examination (GRE), and other evidence pertaining to ability to perform well in graduate work. Special circumstances and work experience may be considered if presented. More specifically, the applicant must:

1. Meet all admission requirements set forth by the Graduate School. These requirements are outlined elsewhere in the catalog.
2. Complete the Graduate Management Admission Test (GMAT) or Graduate Record Examination (GRE) and have the results of the test mailed directly to the Graduate Programs Office, College of Business. Information for the Graduate Management Admission Test (GMAT) can be found at: www.mba.com Information for the Graduate Record Examination (GRE) can be found at: www.ets.org/gre.

Academic Retention

In addition to the retention policies of the Graduate School, a student may earn no more than 5 hours of C or lower in graduate courses taken beyond the foundation requirements, or he/she will be suspended from the Master of Science in Supply Chain Management and Engineering program. A student who has 3 outstanding recorded grades of INC or DEF at the end of any semester or session, for any reason, will be deemed to be not making normal progress and will be placed on probationary status. If the student has 3 outstanding grades of INC or DEF remaining on record at the end of the next semester or session, the student will be suspended from the program. The definitions of INC and DEF may be found in the Graduate Catalog. A student who is to receive a grade of INC in a course is to meet with the instructor to work out a time and conditions for completion of the course within policy guidelines. Typically, a Notification of Incomplete Grade Agreement form is completed and the student is provided with a copy.

College of Business Courses (BA)

Students desiring to enroll in these courses must be admitted to the Master of Science in Supply Chain Management and Engineering degree program or have permission of the Associate Dean of Graduate Programs in the College of Business.

512-3 Supply Chain Cost Accounting. Basic cost concepts, measures, methods, and systems of cost accounting useful for planning, implementation, control, and performance of supply chains. Includes cost analysis relevant for non-routine decision making. Restricted to enrollment in MS in Supply Chain Management and Engineering.

523-3 Innovation and Supply Chains. This course examines the challenges and the opportunities that technological innovation presents to supply chains, companies, and managers. What technology is to supply chains and businesses today, how science

and invention fuel technological innovation, and the organizational challenges that are presented by the evolution of new technology are addressed. Restricted to enrollment in MS in Supply Chain Management and Engineering.

541-3 Analytic Methods for Supply Chain Management. An introduction to mathematical model building in supply chains and the solution techniques commonly used to solve such models. In addition, this course includes statistical methods for decision making. Topical coverage includes decision theory, hypothesis testing, regression, spreadsheet modeling, mathematical programming, queuing models, and simulation. Restricted to enrollment in MS in Supply Chain Management and Engineering.

544-3 Advanced Production Planning and Inventory Management. An in-depth study of analytical models and techniques for production planning, scheduling, and inventory management. Restricted to enrollment in MS in Supply Chain Management and Engineering.

553-3 Supply Markets and Negotiation. This course is designed to address markets and negotiations for managing the purchasing function in supply chains. Restricted to enrollment in MS in Supply Chain Management and Engineering.

565-3 Managing Supply Chain Information. Information system design, analysis and operations. Topics include system concepts, systems analysis and design, database management, software and hardware concepts, decision support systems, expert systems, distributed processing, and telecommunications and information systems planning. SAP applications in supply chain management will be emphasized. Restricted to enrollment in MS in Supply Chain Management and Engineering.

College of Engineering Courses (QEM)

Students desiring to enroll in these courses must be admitted to the Master of Science in Supply Chain Management Engineering degree program or have permission of the Associate Dean of Engineering.

546-3 Project Management for Supply Chain Engineering. The course is designed to provide students with an introduction to the project management process and an in-depth examination of the activities needed to successfully initiate, plan, schedule, and control the time and cost factors of the project as it relates to developing a supply chain system. Executing successful supply chain projects requires the management of technology, people, culture, stakeholders, and other diverse elements. This course takes an integrated approach to managing projects, merging both technical and managerial challenges. It emphasizes not only individual project execution, but also provides a strategic perspective, demonstrating supply chain projects at the program and portfolio levels.

560-3 Supply Chain Engineering. The objective of this course is to introduce the basic principles and techniques of the Lean methodologies and its application targeting specific needs of the Supply Chain professionals in executive sales and operations planning, forecasting, customer relationships, leveling production, dependent demand materials management, capacity management, shop floor control, inventory management, lot sizing, warehousing, logistics, quality control, and purchasing.

562-3 Transportation and Logistics Systems . The course covers different components of logistics and distribution; in particular, those dealing with material movement, associated moveable and immovable facilities/resources, procurement and material refurbishing, warehousing and distribution network systems, and transportation. The major thrust of the course is to explore the optimal planning, design and coordination of large scale warehousing operations and distribution logistics, supply transportation systems (shipping and materials tracking), multi-modal transportation systems and convoy movements.

564-3 Facilities and Location Planning. The course encompasses the planning, design, development, management and control of production and distribution systems to effectively distribute goods and services from the producer to end user, whether in manufacturing or service systems. Topics include analytical approaches in site location, facility layout, material handling, and storage systems. Aspects of facilities for manufacturing, material handling, packaging and distribution, concepts of group technology, and computer aided facility design are covered.

580-3 Analysis of Statistical Quality Data. Controlling and improving has become an important business strategy for many organizations: manufacturers, distributors, transportation companies, financial services organizations, health care providers, and government agencies. Maintaining a high level of product or service quality provides a competitive advantage. A business that can delight customers by improving and controlling quality can dominate its competitors. This course covers the technical methods for achieving success in quality control and improvement, and offers guidance on how to successfully implement these methods. .

585-3 Advanced Data Analysis & Design of Experiments. Experimentation plays an important role in product development and process realization and commercialization activities, which consist of new product design and formulation, manufacturing process development, and process improvement. The objective in many cases may be to develop a robust process, a process affected minimally by external sources of variability. The purpose of this course is to provide the student with a comprehensive coverage of the knowledge areas involved in these studies, focusing on Planning, Designing and Analyzing Experiments (DoE).

Teaching English to Speakers of Other Languages

(See Linguistics for program description)

Telecommunications

(See Mass Communication and Media Arts for program description)

Theater

<http://www.theater.siu.edu/>
tkidd@siu.edu

COLLEGE OF LIBERAL ARTS

Graduate Faculty:

Bogumil, Mary L., Associate Professor, Ph.D., University of South Florida, 1988; Dramatic Literature.

Fagerholm, Thomas, Assistant Professor, M.F.A., Minnesota State University, Mankato, 2012; Technical Direction.

Fink, Timothy, Professor, M.F.A., Southern Illinois University Carbondale, 1993; 1994. Opera music theater.

Fletcher, Anne, Distinguished Professor, Ph.D., Tufts University, 1992; 2001. Theater history, 20th century American political theater.

Kidd, Thomas J., Associate Professor, and *Chair*, M.F.A., Southern Illinois University, Carbondale, 1999; 2004. Acting, directing.

Merrill-Fink, Lori, Associate Professor and *Director University Honors Program*, M.F.A., University of Arizona, Tucson, 1988; 1988. Acting, voice, and movement.

Moe, Christian H., Professor, *Emeritus*, Ph.D., Cornell University, 1958; 1958.

Naversen, Ronald, Professor and *Director of Graduate Studies*, Ph.D., Southern Illinois University Carbondale, 1989; 1989. Scenic design.

Ojewuyi, Olusegun, Associate Professor, M.F.A., Yale University, 1998; 2004. Acting, directing.

Patrick-Benson, Susan, Associate Professor and *Director of Undergraduate Studies*, M.F.A., Rutgers University, 1995; 2006. Voice specialist.

Rush, David, Professor, *Emeritus* Ph.D., University of Illinois, 1973; 1996

Varns, Mark, Professor, M.F.A., University of Missouri-Kansas City, 1990; 1996. Technical direction, lighting design.

Zea, Wendi, Associate Professor M.F.A Kent State University, 2006; 2009 Costume Design.

The Department of Theater is an accredited institutional member of the National Association of Schools of Theatre, 11250 Roger Bacon Drive, Suite 21, Reston, Virginia 20190.

The Department of Theater blends scholarship and practice in an academically based theater experience that provides students with broad based exposure to human experience and a sound foundation in the skills of theater craft. Class work in all areas of theater is complimented by a production program that reinforces both scholarship and practice, creating work that is as imaginative and highly polished as possible. Graduates will be able to apply their knowledge of performance, production, theater history, contemporary practice, literature and theory in a wide variety of theater venues. Graduates will also be able to demonstrate intrapersonal and interpersonal skills in the form of leadership qualities, self discipline, creative expression, critical thinking, and the ability to work effectively as a part of a collaborative team. The development and guidance of talent and discipline, both characteristic of the artist/scholar, are the goals of the Department of Theater.

The Department of Theater maintains two theaters for public

productions: the McLeod Theater, a proscenium stage seating approximately 500, and the Christian H. Moe Laboratory Theater, a flexible stage seating up to 110. The playbill typically encompasses a balance of contemporary, classic, and original works, and offers seven productions including a musical and an opera during the academic year (the latter co-produced with the School of Music). The summer season, McLeod Summer Playhouse, consists of three productions operating as a professional summer stock company, offering stipends, and/or graduate credit.

The Department of Theater offers a graduate program of study leading to a Master of Fine Arts degree in theater. An interdisciplinary doctoral study in theater is sponsored by the Department of Communication Studies.

Admissions

To apply students must fill out the online application for Admission to Graduate Study in Theater <http://www.gradschool.siu.edu/>. Applicants for graduate studies in theater must satisfy the minimum requirements of the Graduate School before being admitted to the department. The application includes a statement of purpose, transcripts from all undergraduate and graduate coursework together with three (3) letters of recommendation from former teachers or supervisors. There is a \$65.00 nonrefundable application fee payable online.

There are additional requirements established by each of the areas of study in the M.F.A. program. Applicants in the directing are required to submit materials that are representative of their previous theater work and/or indicate an aptitude for stage direction (including promptbooks, programs, reviews, photos, video tapes or casebooks from previous directing efforts. Prospective directing students are also required to attend an on-campus interview and audition. At this time, each applicant will work with actors on a directing scene to demonstrate their ability to analyze the scene and work with actors. Applicants in the costume, lighting, scene design and technical direction areas are required to submit portfolio samples of their work. Applicants in the playwriting area must submit approximately 2 to 2 1/2 hours of written material consisting of one full-length play and/or several significant short pieces. These materials should be sent directly to the Director of Graduate Studies at the address below.

Although an undergraduate major in theater is not essential for admission to a graduate degree program in theater, the director of graduate studies may require that certain course deficiencies in undergraduate subject areas be remedied. These requirements are stated in writing on the admissions approval form.

More detailed information about these requirements is obtainable from: Director of Graduate Studies, Department of Theater, Mail Code 6608, Southern Illinois University Carbondale, Carbondale, IL 62901, 618-453-5741.

Financial Assistance

There are several kinds of financial assistance available to graduate students in the Department of Theater. First, there are graduate fellowships awarded on the basis of superior scholarship. Second, special fellowships are offered annually to students who show promise of success in graduate studies although their academic records have been only average due

to economic disadvantages. The fellowships have no service requirements. Third, graduate assistantships with competitive stipends are available to students who are employed in various academic support positions, such as teaching, research, and production. All fellowships and assistantships include a waiver of tuition (both in-state and out-of-state). Applications for financial assistance may be obtained by contacting the director of graduate studies.

The Master of Fine Arts Degree Program

The Master of Fine Arts degree program in theater emphasizes practical expertise in one of the following areas: directing, playwriting, costume design, lighting design, scene design and technical direction. The department encourages interdisciplinary study in related fields including performance studies, dramatic literature, dramaturgy, musical theatre and opera. In most instances, a three-year residency is required of all M.F.A. students.

All M.F.A. students must complete a minimum of 60 semester hours of course work, including the M.F.A. degree core requirements:

- THEA 500 Introduction to Research Methods, 3 hours
- THEA 501 Contemporary Developments, 3 hours
- THEA 599 Thesis, 6 hours

Total M.F.A. Core: 12 Hours

In addition, each area of study has specific area and elective requirements which are as follows.

Directing

- M.F.A. core, 12 hours
- THEA 401A Stage Management, 2 hours
- THEA 401B Stage Management Lab, 1 hour
- THEA 402 Directing Studio, 3 hours
- THEA 417 Advanced Acting, 3 hours
- THEA 502 Advanced Directing Studio, 9 hours
- THEA 504A Drama, Theories & Conventions, 3 hours
- THEA 504B Drama, Theories & Conventions, 3 hours
- THEA 511A Playwriting I, 3 hours
- THEA 520A Period Styles for Theater, 3 hours
- THEA 520B Period Styles for Theater, 3 hours
- Design Classes, (select 2 of 3) 6 hours
 - THEA 407 Scene Design
 - THEA 414 Costume Design
 - THEA 418 Lighting Design
- Electives (by advisement), 9 hours

Total: 60 hours

Costume Design

- M.F.A. core 12 hours
- THEA 414 Costume Design, 3 hours
- Design & Production Classes, (select 2 of 3) 6 hours
 - THEA 407 Scene Design
 - THEA 418 Lighting Design
 - THEA 419 Technical Direction
- THEA 510 Production Design Seminar, 6 hours
(to be taken every semester in residence)
- THEA 516 Advanced Design & Production, 2-8 hours
(may be taken 4 semesters)
- THEA 412 Patterning & Draping for the Theater,

2 hours

- THEA 413 Drafting for the Theater, 3 hours
- THEA 415-A/B Costume Crafts I & I 2-4 hours
(each section may be taken twice)
- THEA 512 Advanced costume Construction, 2-8 hours
(may be taken four times)
- THEA 520A Period Styles for Theater, 3 hours
- THEA 520B Period Styles for Theater, 3 hours
- Electives (by advisement), 8 hours

Total: 60 hours

Lighting Design

- M.F.A. core, 12 hours
- THEA 418 Lighting Design, 3 hours
- Design & Production Classes, (select 2 of 3) 6 hours
 - THEA 407 Scene Design
 - THEA 414 Costume Design
 - THEA 419 Technical Direction
- THEA 510 Production Design Seminar, 6 hours
(to be taken every semester in residence)
- THEA 516 Advanced Design & Production, 2-8 hours
(may be taken 4 semesters)
- THEA 520A Period Styles for Theater, 3 hours
- THEA 520B Period Styles for Theater, 3 hours
- Electives (by advisement), 19 hours

Total: 60 hours

Scene Design

- M.F.A. core, 12 hours
- THEA 418 Lighting Design, 3 hours
- Design & Production Classes, (select 2 of 3) 6 hours
 - THEA 407 Scene Design
 - THEA 414 Costume Design
 - THEA 419 Technical Direction
- THEA 510 Production Design Seminar, 6 hours
to be taken every semester in residence)
- THEA 516 Advanced Design & Production, 2-8 hours
(may be taken 4 semesters)
- THEA 520A Period Styles for Theater, 3 hours
- THEA 520B Period Styles for Theater, 3 hours
- Elective (by advisement), 19 hours

Total: 60 hours

Technical Direction

- M.F.A. core, 12 hours
- THEA 419 Technical Direction, 3 hours
- Design & Production Classes, (select 2 of 3) 6 hours
 - THEA 407 Scene Design
 - THEA 414 Costume Design
 - THEA 418 Lighting Design
- THEA 510 Production Design Seminar, 6 hours
(to be taken every semester in residence)
- THEA 516 Advanced Design & Production, 2-8 hours
(may be taken 4 semesters)
- THEA 520A Period Styles for Theater, 3 hours
- THEA 520B Period Styles for Theater, 3 hours
- Electives (by advisement), 19 hours

Total: 60 hours

Playwriting

M.F.A. core, 12 hours

THEA 400- or 500-level Theater History courses by advisement, 6 hours

THEA 500 Research Methods, 3 hours

THEA 501 Contemporary Developments, 3 hours

THEA 503 New Play workshop, 18 hours

THEA 504A Theories and Conventions, 3 hours

THEA 504B Theories and Conventions, 3 hours

THEA 511A Playwriting I, 3 hours

THEA 511B Playwriting II, 3 hours

THEA 599 Thesis, 6 hours

Electives (by advisement), 12 hours

Total: 60 hours

Projects: Collaborative Short Play Evenings/Workshop Production of full-length in Festival/Thesis

*Any two of these Theater History courses must be taken in year 1 or 2 by advisement:

THEA 450 Special Topic

THEA 454 American Theater

THEA 460 Black Theater

THEA 525 Contemporary Experiments in Drama

THEA 550 Special Topics may apply depending on the topic (may be repeated)

Certain other Theater, English or Communication Studies courses may apply with permission

**THEA 402 Directing Studio must be taken in the first two years unless playwrights already have directing experience.

Suggested Electives:

THEA 455 Dramaturgy

THEA 502 Advanced Directing Studio

English 492A Creative Writing Fiction

English 492B Creative Writing Poetry

English 492C Creative Writing Literary Non-Fiction

English 592 Creative Writing Seminar

Dramatic writing not already taken to satisfy requirements (film, TV, performance studies)

Theater History courses not already taken to satisfy requirements

Besides the core requirements, the students will propose and successfully complete a project to qualify for further study in their chosen area. This project will include a research component in conjunction with a realized practical project.

Thesis requirements vary for each area of study; however, they include a research component as well as a description and evaluation of the student's creative project. In concert with the student's committee, the candidate may choose to separate the two, submitting an approved research paper during the first academic year and a creative thesis after completion of the M.F.A. final project.

The Department of Theater requires an oral examination, conducted by the student's thesis committee, for each M.F.A. candidate. The examination covers the thesis or dissertation, and may include questions designed to ascertain the student's general competence in theater.

Doctor of Philosophy Degree

The Department of Theater offers a program of study in Theater History and Playwriting under the administration of the Department of Communication Studies leading to a Doctor of Philosophy Degree in Communication Studies.

Admission

To apply students must fill out the online application for Admission to Graduate Study in Communication Studies <http://www.siu.edu/gradschl/>. Applicants for graduate studies in theater must satisfy the minimum requirements of the Graduate School before being admitted to the department. The application includes a statement of purpose, transcripts from all undergraduate and graduate coursework together with three (3) letters of recommendation from former teachers or supervisors.

There is a \$50.00 nonrefundable application fee payable online or by check made out to SIU.

Additionally, prospective students must submit materials that are representative of their previous theater work and/or indicate an aptitude for work in their chosen field of study. Applicants to Theater History must include several critical research essays. Applicants to the playwriting must submit approximately 2 to 2 1/2 hours of written material consisting of one full-length play and/or several significant short pieces. All prospective students should include a sample of their research writing. Video tapes/DVDs or websites are acceptable digital materials.

More information for prospective and current students is available at the Department of Theater website <http://www.theater.siu.edu/> and the Department of Communication Studies website <http://cola.siu.edu/communicationstudies/>.

A student must take 51 semester credit hours of course work beyond the master's degree, 24 hours of which must be in Theater, 18 hours in Communication Studies, and 9 hours methodology (tool) courses. In addition, 24 semester credit hours of dissertation work are required for the Ph.D. degree. Course work outside the department must be germane to one of the departmental curriculum areas for purposes of examination and dissertation research. Throughout the program of study, the student must maintain a 3.00 grade point average in all work taken. If the grade point average drops below the minimum, the student is placed on academic warning for the following two semesters. During the last half of the second semester of course work, the student's progress shall be reviewed by the advisory committee to determine continuation, change, or termination of the program. The advisory committee for each student shall be responsible for assembling the necessary information (grades, recommendations, progress in curriculum areas, etc.) for consideration in reaching the above decision.

Advisory Committee. A three (3) person advisory committee shall be established no later than the beginning of the second semester of graduate study to plan the program of study with each student. The chair of the committee shall act as the primary adviser and sign the graduate course request form. This advisory committee is responsible for certifying to the graduate director that the student has met all departmental requirements for admission to candidacy and has passed the Ph.D. preliminary examination.

Students selecting Theater as a curriculum concentration must take the following:

**Communication Studies Theater Concentration,
18 hrs. (must include)**

CMST 501	Introduction to Research Methods, 3 hours
CMST 510	Rhetorical Theory, 3 hours

Theater 24 hours (must include)

THEA 501	Contemporary Developments, 3 hours
THEA 504A	Theories and Conventions I, 3 hours
THEA 504B	Theories and Conventions II, 3 hours

Methodology Courses, 9 hours.

(must be germane to the dissertation topic)

Dissertation, 24 hours

Total 75 hours

Preliminary Examination. The student must pass a preliminary examination on his/her program of study. The preparation and administration of the examination are determined by the advisory committee in consultation with the student. The examination is taken at the end of the course work.

Dissertation. Each student must register for at least 24 semester hours of dissertation credit in THEA 600. The dissertation director shall, upon consultation with the student, be responsible for setting up a dissertation committee, supervising the dissertation, and administering the final oral examination. The dissertation committee shall approve the dissertation prospectus and pass upon the completed dissertation and oral examination.

The Graduate School requires students who have not completed their dissertation to enroll in THEA 601 Continuing Research until they complete the dissertation or withdraw from the program. Students who do not register for this class will be charged for all semesters before they may graduate.

Students are required to submit an electronic copy of the dissertation to the Graduate School and one bound copy to the Department of Theater.

Courses (THEA)

400-1 to 6 (1 to 2 per semester) Production. Practicum for support of major department productions in all areas. Roles in department productions may fulfill requirement.

401A-2 Stage Management. Study of the theories and skills required to successfully stage manage a theater production. Prerequisite: THEA 217, THEA 218A with C or better and concurrent enrollment in THEA 401B.

401B-1 Stage Management Lab. Practical application of the theories and skills learned in the 401A course and applied on a department of theater production. Prerequisite: THEA 217, THEA 218A with C or better and concurrent enrollment in THEA 401A.

402 3 to 6 (3,3) Directing Studio. Introduction to the art of directing through examination of various genres. An exploration of the fundamentals of directing culminating in scene work and studio presentation. Advanced students will approach the directing process from play selection through dramaturgy to production and through the context of contemporary directing styles. Prerequisites: THEA 217 and THEA 311A with C or

better.

403A-3 Advanced Movement for the Actor. Advanced studies in stage movement with special attention to period styles. Prerequisite: THEA 303A, THEA 317A, THEA 317B.

403B-3 Advanced Voice for the Actor. Advanced studies in voice with special attention to stage dialects and advanced vocal techniques. Prerequisite: THEA 303B, THEA 317A.

404-3 Theater Management. Discussion of legal and financial aspects concerning the professional and community theaters of the United States. Consideration of and practice in managerial activities of an educational theater including administration, purchasing, accounting practices, direct sales, publicity, promotion and public relations.

406-9 (3,3,3) Properties Studio. Beginning and advanced studio work in traditional and non-traditional crafts for theatrical events, including mask work, puppetry, stage furniture construction, upholstery, weaponry, armor, and special effects. Repeatable. Studio fee: \$60. Prerequisite: THEA 218A with C or better.

407-3 Scene Design. Technical and artistic aspects of scene design. Theory and practice. Prerequisite: THEA 218A and THEA 413 with C or better.

409-6 (2,2,2) Scene Painting Studio. Studio work in basic and advanced scene painting techniques and materials. Projects include wood, drapery, foliage, marble, transparencies, scrim painting, dye painting, faux finishes, metal reflections, and murals. Repeatable. Prerequisite: THEA 218A. Studio fee: \$65.

410-9 Children's Theater. Theory and practice in performing theater for children. Class activities include lectures on various aspects of production as well as producing a touring children's play for local area schools. Special approval needed from the instructor.

412-2 Patterning and Draping for the Theater. This course introduces the theatrical costume design and technical student to the basics of pattern development and construction techniques used to develop a 3-dimensional theatrical costume, with focus on giving the student a working knowledge of costume production, flat patterning, and draping techniques. Prerequisite: THEA 218C with C or better. Studio fee: \$25.

413-6 (3,3) Drafting for the Theater. Development of the student's skill in scenographic techniques including ground plans, sections, elevations, and detail construction drawings. Prerequisite: THEA 218A with C or better.

414-3 Costume Design. Technical and artistic aspects of costume design. Development of the design process, understanding and use of color theory and fabric, and practice of costume drawing techniques. Prerequisite: THEA 218C with C or better.

415A-2 to 4 Costume Crafts I. This course focuses on advanced skills in costume technology, including but not limited to, millinery, jewelry-making, armor and masks. Prerequisite: THEA 218C, THEA 412 with grades of C or better. Craft fee: \$35.

415B-2 to 4 Costume Crafts II. This course focuses on advanced skills in costume technology, including but not limited to, dyeing and fabric modification, wig ventilating, and dress form model projects. Prerequisite: THEA 218C, THEA 412 with C or better. Craft fee: \$35.

416A-3 Structural Design for the Stage Part I. An in-depth study of the art and practice of structural design for the stage

including forces, stresses, strains, load analysis, geometric properties of materials and simple beam design. Prerequisite: THEA 218A with a minimum grade of C.

416B-3 Structural Design for the Stage Part II. Continued study of the art and practice of structural design for the stage including beam design, column and tension member design and combined loading design for sawn lumber and steel materials. Prerequisite: THEA 218A and 416A with a minimum grade of C or special approval needed from the instructor.

417-3 to 6 (3,3)Advanced Acting. Utilization of the actor's process in the performance of various theories and styles of acting. May be repeated once for credit. Prerequisite: THEA 317B.

418-3 Lighting Design. Investigation of stage lighting design, theory and professional practice. Special attention to color theory and its application to stage lighting. Lecture/Laboratory. Prerequisite: THEA 218B and THEA 413 with C or better.

419-3 Technical Direction. Advanced study of principles and procedures of scenic construction and stage rigging. Includes scene shop organization, materials, and specialized stage equipment; preparation for professional technical direction. Lecture and laboratory to be arranged. Prerequisite: THEA 218A and THEA 413 with C or better.

450-3 to 9 Topical Seminar. An intense examination and application of selected areas of interest. Topics will vary and may include such areas as stage management, audition and interview, current political theater.

454-3 American Theater. The development of American theater from colonial times to the present. Includes a study of the American musical theater from preminstrels through contemporary music-drama.

455-3 Dramaturgy. An introduction to the theory and practice of dramaturgy, including a survey of contemporary critical theories as they apply to the pre-production work of the dramaturg. The student will apply methodologies studies to plays from the classical repertory and to the works of new playwrights. Prerequisite: THEA 311A with C or better.

460-3 Black Theatre: Intersections of Culture and Performance. (Same as AFR 420) This course will freely examine the intersections between African and African American theater. It will study the origins, form and agenda of Black Theater by tracing the commonalities of culture and performance between African and African American theaters. Students will be exposed to seminal essays, topical plays and performances while they hone their own critical and creative skills.

500-1 Theater Research Methods. An introduction to the principles and methods of research and writing in theater with a focus on selected areas of specialization within the various degree programs. Required of all Masters Theater students. Restricted to Theater Majors. Special approval needed from the instructor.

501-3 Contemporary Developments. A survey of the significant developments in theater and related arts from the beginning of the 19th century to the present through the study of documentary material, critical works, and selected plays. Individual reports, guest lecturers and lectures provide focus on selected areas. Required reading encompasses a broad spectrum of subjects. Special approval needed from the instructor.

502-3 to 12 (3,3,3,3) Advanced Directing Studio. Emphasis on

practical directing problems and concerns of individual students through research, rehearsal and performance. Includes survey of directing theories and practices with laboratory application of directing techniques. Special approval needed from the instructor.

503-1 to 3 The New Play Workshop. This class prepares students for a prominent feature of the U.S. theater landscape: the new play workshop. This entity, between a production and reading, is an economic and artistic powerhouse, not just for playwrights, but for all theater artists. This class trains students using some of the methods of the most eminent new play workshops in order to demystify the process. Variable credit and repeatable. Special approval needed from the instructor.

504A-3 Drama, Theories and Conventions. A historical and critical survey of dramatic theory, examining key critical texts and representative plays; from the Greeks through the Jacobean. Restricted to graduate standing or special approval needed from the instructor.

504B-3 Drama, Theories and Conventions. A historical and critical survey of dramatic theory, examining key critical texts and representative plays; from the restoration to the 20th Century. Restricted to graduate standing or special approval needed from the instructor.

506-2 to 4 The Collaborative Process. The theory and practice of the collaborative processes involved in play production; how designers, technicians, directors and playwrights interact with and communicate to each other to work as a creative team. Activities involve both hypothetical and fully realized productions when appropriate. May be taken for up to 4 hours.

510-6 (1,1,1,1,1) Production Design Seminar. Exploratory workshop experience in rendering techniques, creative problem solving, design aesthetics, and production philosophies. To be taken by graduate production design students in residence, each semester, with exceptions by consent of instructor.

511A-3 Playwriting I. This course assumes basic writing knowledge. It advances techniques of structure and dialogue in playwriting. Written exercises are submitted and discussed to identify dramatic events. Students will self-produce several short plays in collaborative performances. Students will initiate development of a full-length play. Special approval needed from the instructor.

511B-3 Playwriting II. This course continues to develop advanced techniques of structure and dialogue in playwriting. Students will examine canonical plays to understand the tools used by the playwrights. Students will write short plays and self-produce several short plays in collaborative performances. Students will write a full-length play. Prerequisite: THEA 511A. Special approval needed from the instructor.

512-2 to 8 Advanced Costume Construction. This course focuses on advanced skills in the areas of cutting and draping for the theater. A variety of techniques will be taught, including but not limited to, flat pattering, bias draping, tailoring, and historical construction techniques. Prerequisite: THEA 218C, THEA 412 or special approval needed from the instructor.

516-2 to 12 Advanced Theater Design and Production. An advanced studio-based study of the theories and practices of modern production and design with particular emphasis on the interaction of the sub-disciplines of scenic, costume, light, sound design, and technical production as well as the collaborative

nature of theatrical production. Special approval needed from the instructor.

520A-3 Period Style for Theater I. A survey of the costumes, architecture, furniture, decorative styles and motifs of major periods and countries relating to western culture and theater. Egyptian to the Renaissance.

520B-3 Period Style for Theater II. A survey of the costumes, architecture, furniture, decorative styles and motifs of major periods and countries relating to western culture and theater. Late Renaissance to 20th Century. Prerequisites: THEA 520A or special approval needed from the instructor.

522-1 to 12 SIU Summer Theater. Practical experience in summer stock play production. Performance or technical work in SIU Summer Theater only. Maximum of six hours per summer. Special approval needed from the instructor.

525-3 Contemporary Experiments in Drama. By studying contemporary literary theory and applying these critical tenets to new American plays, students develop tools to use in reading, understanding and writing plays in unconventional, non-traditional styles. Course work includes extensive reading of both essays and plays, discussing these matters, preparing reports and writing a play. Special approval needed from the instructor.

530-1 to 12 Independent Study. Independent research on selected problems. A maximum of three credit hours may be taken for a single project. Special approval needed from the instructor.

550-2 to 6 (2 per topic) Topical Seminar. In-depth studies of topics of special interest to advanced students concerning individual or groups of playwrights, directors, designers, and their techniques and theories. Topic is determined in advance. Special approval needed from the instructor.

560-1 to 21 Professional Work Experience. Credit may be granted for professional work experience prior to acceptance into the program. Special approval needed from the instructor. Graded *S/U* only.

561-1 to 12 Theater Internship. After completion of the M.F.A. core curriculum and basic courses in student's specialization, credit may be granted for internship at professional theaters, training programs, or studios. Special approval needed from the instructor. Graded *S/U* only.

599-1 to 6 Thesis. Minimum of three hours to be counted toward a Master's degree.

600-1 to 36 (1 to 16 per semester) Dissertation. Minimum of 24 hours to be earned for the Doctor of Philosophy degree.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Women, Gender and Sexuality Studies

<http://womenstudies.siu.edu/>

wgss@siu.edu

Certificate in Women, Gender and Sexuality Studies

The purpose of the graduate certificate in Women, Gender and Sexuality Studies is to meet the demand for formal recognition of graduate level credentials in WGSS, and to enhance and broaden the perspectives of graduate students from various related fields. The program requires 18 hours of coursework. Nine hours must be at the 500-level, which includes WGSS 596 and WGSS 597. Six hours must be taken outside the student's major discipline. The student must be currently enrolled in a graduate degree program at SIU or an individual holding a bachelor's degree and admitted to the Graduate School (non-declared).

For more information, contact:

Dr. Barbara Bickel, Director

Women, Gender and Sexuality Studies

Southern Illinois University Carbondale MC 6518

Carbondale, IL 62901

Email: wgss@siu.edu

Courses (WGSS)

There is no graduate program in Women Gender and Sexuality Studies. Four-hundred-level courses may be taken for graduate credit unless otherwise indicated in the course description.

401-3 Contemporary Feminism in Global Contexts. This course discusses theories and practices of third wave feminism from a national and global perspective. We will discuss ways third wave feminism is being talked about and understood by others and ourselves. The selected readings offer a range of voices and articulation of third wave feminism including United States, post-colonial, transnational, queer, multicultural, theoretical, and practical. The course is heavy on reading. By the end of this course students should be able to express their understanding of third wave feminism.

403-3 Masculinity in the United States. This course is a reading-based seminar covering concepts of masculinity in the United States. The readings cover cultural as well as identity elements of what being a "man" means (and how that definition has changed over time and contexts), historical as well as contemporary understanding of masculinity.

406A-3 Gender, Family, and Sexuality in Pre-Modern Europe. (Same as HIST 406A) A discussion of the history of the family, creation of gender roles, and importance of sexuality from medieval times to the French Revolution.

406B-3 Gender, Family and Sexuality in Modern Europe. (Same as HIST 406B) From the French Revolution. A discussion of the history of family, creation of gender roles, and importance of sexuality from the French Revolution to the present. Fulfills the CoLA Writing-Across-the-Curriculum (WAC) requirement.

410-3 Transcending Gender. (Same as ANTH 410L) How do humans become male and female in different societies? Can men become women and women become men? What other gender possibilities exist? Is male dominance universal? What are the sources of male and female power and resistance? Do women

have a separate culture? What is the relationship between gender, militarism and war? These and other questions will be examined in cross-cultural perspective. Prerequisite: ANTH 240D or ANTH 500D.

411-3 Human Sexuality. (Same as HED 410) Provides detailed information on dimensions of sexuality; characteristics of healthy sexuality; anatomy and physiology; gender roles; relationships; sexually transmitted infections/diseases; contraceptive issues and concerns; sexual victimizations; and sexuality through the life cycle.

415-3 to 6(3,3) Topics in Gender, Sexuality, and Communication. (Same as CMST 415) An exploration of advanced theories and research in gender and sexuality from communication perspectives. Course may be repeated when topics vary.

416-3 Black Feminist Thought as Theory and Praxis. (Same as AFR 416, CMST 416) Explore the roots, contemporary manifestations, and current embodiments of black feminist thought. Explore the works of black women to engage in critical thinking and thoughtful dialogue that positions the valuable knowledge, experiences and perspectives of women of color at the center of inquiry while simultaneously discovering spaces for multicultural alliances. Prerequisite: CMST 301I or 341 or consent of instructor.

426-3 Gender, Culture, and Language. (Same as ANTH 426 and LING 426) This course is designed for students who have had some exposure to gender studies. It will focus on readings in language and gender in the fields of anthropological and socio-linguistics. Issues to be addressed are the differences between language use by men/boys and women/girls, how these differences are embedded in other cultural practices, and the various methodologies and theories that have been used to study gendered communication.

437-3 Lesbian and Gay History in the Modern United States. (Same as HIST 437) This course explores the social, political, and cultural history of lesbians, gay men, and other sexual and gender minorities in the United States from the turn of the twentieth century to the present. Themes to be taken up in the class include: the emergence of heterosexuality and homosexuality as distinct categories of identity; the intersection between sexual identity and identities of race, class, gender, and ethnicity; the relationship between homosexuality and transgenderism; the movement for gay liberation; the creation of lesbian and gay urban and rural subcultures; representations of homosexuality in popular culture; anti-gay backlash; and AIDS.

438-3 Women and the Law. (Same as POLS 438) This course is an advanced seminar in public law with a focus on gender, law and society. The course will engage with issues in feminist legal practice and the development of legal theories regarding gender. We will interrogate the relationship between theory and practice and the ways in which feminist jurisprudence has taken shape in the dynamics of this relationship. POLS 114 and 230 recommended prerequisites.

440-3 Queer Visual Culture. (Same as CP 469) Course discusses aspects of the aesthetics, history, theory and politics of media representations of gender and sexuality. Cultural texts from one of a combination of media forms, genres, historical periods, and platforms will inform the historical and theoretical consideration of media representations of gender and sexual

variation with a special interest on their bearings upon the present moment. May be repeated if topics vary.

442-3 Sociology of Gender. (See SOC 423)

446-3 Gender and Global Politics. (Same as POLS 456) An advance course examining gender systems and women's situations across cultures and countries. This course also studies the impact globalization has had on gender issues by looking at women's activism at international and transnational levels. Topics covered include women's political representation, gender and culture, women's social movements, gender and development, and gendered policy issues.

448-3 Gender and Family in Modern U.S. History. (Same as HIST 448) This course explores the history of gender and the family in the United States from the late 19th century to the present. Themes to be explored include: the family and the state, motherhood, race and family life, and the role of the "family" in national politics.

449-3 Advanced Human Sexuality. (Same as PHSL 450) Advanced, comprehensive course intended to supplement and expand the critical examination of topics covered in PHSL 320, Reproduction and Sexuality. The objectives of this class are to examine the physiological and behavioral basis of human reproduction and sexuality. Examining how humans reproduce from a physiological perspective including all aberrations and clinically relevant dysfunctions, as well as, the spectrum of human sexual behaviors including typical and atypical sexual behavior, paraphilias and diversity of human relationships. Prerequisite: PHSL 320.

450A-3 Women in Music. (Same as MUS 450A) Explores the creative contributions of women in music, examining women's participation across a range of genres, cultural/geographic areas, and time periods. Restricted to junior/senior/graduate music major or consent of instructor.

452A-3 Traditions of Uppity Women's Blues. (Same as MUS 452A and AFR 452A) Examines the tradition of "uppity" women's blues from the so-called "classic" blues singers of the 19th century (Gertrude "Ma" Rainey, Bessie Smith, Ida Cox, etc.) to the contemporary blues of Saffire, Denise LaSalle and others. Explores ways blues women challenge conventions of gender and sexuality, racism, sexism, classism, and homophobia. Restricted to junior/senior/graduate music major or consent of instructor.

456-3 Feminist Philosophy. (See PHIL 446) Expand the course to a sequence: **(a)** Feminist Philosophy – a general survey of feminist theory and philosophical perspectives. **(b)** Special Topics in Feminist Philosophy – a special area in feminist philosophy explored in depth, such as Feminist Ethics, French Feminism, Feminist Philosophy of Science, etc. **(c)** Women Philosophers – explores the work of one or more specific women philosophers, for example Hannah Arendt, Simone DeBeauvoir, etc.

464-3 Audio Documentary and Diversity. (Same as RTD 464) The purpose of this course is the creation of short and long form audio documentaries by students, regardless of production background. It will introduce students to basic production techniques and diversity considerations during the making of a documentary. This course uses qualitative methods to investigate an issue or document an event, with an emphasis on observation and interview techniques. Topics will explore the

role of gender, race, ethnicity, and class during the planning, gathering, and production stages of the documentary. Course open to non-majors.

465-3 History of Sexuality in America. (Same as HIST 465) Comprehensive survey of sexuality from colonial times to the present. Examines social trends, politics, and cultural debates over various forms of sexuality. Students will engage in discussion, research, and writing.

470-3 College Student Sexuality. (Same as EAHE 470) Seminar designed to provide students with a strong grounding in the field of college student sexuality and sexual identity, covering the lived experiences of U.S. college students, the construction of sexualized collegiate identities through U.S. history, and how institutions of higher education have attempted to regulate, control, and (intentionally as well as inadvertently) effect college student sexuality.

475-3 College Student Masculinities. A readings-based seminar covering theories and concepts of masculinity as demonstrated by collegiate men in the United States. The readings in this course cover cultural as well as identity elements of what being a "college man" means (and how that definition has changed over time and contexts). The readings cover historical, theoretical and empirical research on collegiate men and masculinity. Prerequisite: WGSS 403 or consent of the instructor.

476-3 Women, Crime and Justice. (Same as CCJ 460 and SOC 461) A study of women as offenders, as victims, and as workers in the criminal justice system.

489-3 Women, State, and Religion in the Middle East. (Same as HIST 489) Following an introduction to the question of women in Islamic law and Islamic History, this course will examine the changing status and experiences of women in a number of Middle Eastern countries in the 20th century, focusing on Egypt, Iran, and Turkey. Major themes will include legal, social and political rights, participation in social and economic life, cultural and literary production, and recent secular and Islamist women's movements.

490-1 to 6 Readings. Supervised readings in selected content areas of Women, Gender, and Sexuality studies.

493-2 to 6 Individual Research. Exploration of a research project under the supervision of a faculty member having graduate faculty status. The project must result in a written research report which is filed with the director of Women, Gender and Sexuality Studies. Restricted to senior standing. Special approval needed from the instructor and Director of Women, Gender and Sexuality Studies.

494-1 to 6 Practicum. Supervised practical experience in situations centering on women's issues, organizations, services, etc. The setting may be in one's own field of study or in the general content areas recognized in the Women, Gender and Sexuality Studies program. Special approval needed from the instructor and Director of Women, Gender and Sexuality Studies.

496-3 Advanced Special Topics in Sexual Diversity Studies. Advanced consideration of a topic of interest in sexual diversity studies not offered through regular course listings.

497-3 Independent Study in Sexual Diversity. Supervised readings in selected content areas in sexual diversity studies. This is a capstone, synthesizing experience for students in sexual diversity studies. Prerequisites: WGSS 201, 203. Special

approval needed from the instructor.

515-3 to 9 (3,3,3) Communication and Gender. (Same as CMST 515) How communicative activity creates and sustains human beings as gendered. Emphasis on gaining familiarity with contemporary research on gendering from a particular perspective (e.g., ethnography, performance, phenomenology, quantitative methods, rhetorical criticism). May be repeated when perspective varies. Perspective announced prior to each offering.

525-3 Theorizing the Body. (Same as ANTH 525) This seminar explores a broad range of theoretical readings centering on the human body. Once the province of medical science and certain schools of philosophy, recent research in the social sciences and the humanities position “the body” as a primary site of socialization, gendering, social control.

535-3 Seminar: Gender in Higher Education. (Same as EAHE 535I) A seminar for specialized study of administrative practice and policy in gender in higher education.

544-3 Sociology of Gender. (Same as SOC 544) Examines major theories, themes, and research methods on the intersection of gender, race, class and sexuality. Topics may include: construction of gender, race, class and sexual identities; work; social movement; intersection of family and work; parenting and reproduction; historical and cross-national dimensions.

546-3 Language, Gender and Sexuality: Anthropological Approaches. (Same as ANTH 546, LING 545) This course examines the study of language in society with a particular focus on how linguistic practices are part of the construction of gender and sexuality identities, ideologies, social categories and discourses. Anthropological theories applied to the study of language, gender and sexuality will be covered along with a variety of methodological approaches.

550-3 The Psychological Construction of Gender. (Same as PSYC 550) This course will focus on the psychology of gender within a feminist perspective and using a feminist approach. The term feminism, as used here, primarily implies that we will consider information and ideas for more diverse than simple empirical data. In our reading and discussion, we will consider politics, discrimination, the history of science, the history of patriarchy, the development of theory and ideas in general and the development of feminism in particular, and objective versus subjective views of science, and within these contexts, we will consider and study the psychology of gender.

560-3 Gender and Sport: Sociological and Psychological Perspectives. (Same as KIN 560) This course explores psychological and sociological dimensions underlying the concept of gender and critically examines how gender relates to sport and physical activity. Students will be introduced to non-traditional as well as traditional research that addresses the issue of gender in various physical activity contexts.

565-3 Continental Feminist Philosophy. (Same as PHIL 565) An examination of major figures and problems in continental feminism, focusing on metaphysical, ethical, political, and aesthetic theories in the works of Beauvoir, Kristeva, Irigaray, Butler, and Kofman.

575-3 Women in Higher Education. (Same as EAHE 575) The goal of this course is to provide an overview of women in higher education. Topics that will be considered are: feminism’s impact of women in higher education; the division of labor for women

(including faculty and professional staff positions); historical and sociological perspectives of access to higher education including curriculum and pedagogy.

576-3 College Men and Masculinities. (Same as EAHE 576) This course is a readings-based seminar covering concepts of masculinity as demonstrated by collegiate men in the United States. The reading in this course cover cultural as well as identity elements of what being a “college man” means (and how that definition has changed over time and contexts). The readings consist of historical, contemporary, and theoretical scholarship concerning collegiate masculinity.

590-1 to 3 Readings. Supervised readings in selected advanced subjects. Special approval needed from the instructor and the Director of Women, Gender and Sexual Studies.

591-1 to 3 Special Topics. Concentration on a topic of interest not offered through the regular course listings. Special approval needed from the instructor and the Director of Women, Gender and Sexual Studies.

592-3 Women and Religion. This course will heighten and strengthen student’s awareness of the roles and responsibilities of women as outlined in the sacred writings and scriptures of various world religions and as carried out in various cultures around the world.

593-3 Masculinity in the United States. This course is a reading-based seminar covering concepts of masculinity in the United States. The readings cover cultural as well as identity elements of what being a “man” means (and how that definition has changed over time and contexts), historical as well as contemporary understandings of masculinity.

595-1 to 3 T.A. Practicum in Educational Women, Gender and Sexuality Studies. This course provides students with supervision in their work toward course development in Women, Gender & Sexuality Studies. The instructor of record will meet with practicum members on a regular basis, and, together, they will work towards the research and syllabus construction necessary for a WGSS course. Pedagogical strategies will also be covered. Must have consent of the Director of Women, Gender and Sexuality Studies. Graded by S/U only.

596-3 Advanced Feminist Theories. This course introduces students to the past, present, and potential future of feminism and its various permutations. Readings are designed to stress historical, intellectual, and contemporary issues in order to inspire in-class discussion and to provide foundations for written assignments. Emphasis varies by instructor.

597-3 Graduate Pro-Seminar in Women’s Gender and Sexuality Studies. This proseminar introduces graduate students to the field of Women, Gender, and Sexuality Studies (WGSS). This approach is both interdisciplinary as well as multidisciplinary. The course guides students through a process by which they build a detailed map of the intersection between their course of study and the field of WGSS. Emphasis varies by instructor.

Workforce Education and Development

<http://ehs.siu.edu/wed/>
wed@siu.edu

COLLEGE OF EDUCATION AND HUMAN SERVICE

Graduate Faculty:

Anderson, Marcia, Professor, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1975; 1970.

Bailey, Larry J., Professor, *Emeritus*, Ed.D., University of Illinois, 1968; 1969.

Baker, Clara Mae, Associate Professor, *Emerita*, Ph.D., Ohio State University, 1989; 1989.

Bortz, Richard F., Professor, *Emeritus*, Ph.D., University of Minnesota, 1967; 1977. Instructional systems design, occupational training and curriculum development, organizational and occupational analysis, competency-based education and training, individualized instruction, faculty development and evaluation.

Bubnas, Phyllis, Assistant Professor, *Emerita*, M.S., Southern Illinois University, 1960, 1972.

Buila, Theodore, Associate Professor, *Emeritus*, Ph.D., Cornell University, Ithaca, NY, 1968; 1968.

Gooch, Bill G., Professor, *Emeritus*, Ed.D., University of Tennessee, 1973; 1973.

Hagler, Barbara, Associate Professor, Ph.D., Arizona State University, 1991; 1987. Business education, improvement of teaching, workforce education foundations, computer technology, distance education, training and human resource development.

Putnam, Alvin R., Associate Professor, *Emeritus*, Ed.D., Oklahoma State University, 1978; 1997.

Ramp, Wayne S., Professor, *Emeritus*, Ed.D., Bradley University, 1956; 1957.

Reneau, Fred W., Professor, *Emeritus*, Ed.D., Virginia Polytechnic Institute and State University, 1979; 1979.

Ridley, Samantha Sue, Assistant Professor, *Emerita*, M.S., Southern Illinois University Carbondale, 1959; 1964.

Rosenbarger, Maxine, Associate Professor, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1970; 1973.

Shields, Bill, Assistant Professor, *Emeritus*, M.S., Southern Illinois University, 1962. 1962. Instructional systems design, methods and techniques of training, training systems management.

Sims, Cynthia H., Chair and Associate Professor, Ed.D., Northern Illinois University, 2004; 2005. Adult education and learning; workforce diversity; power and privilege; human resource development; service-learning; diversity in higher education; and campus-community partnerships.

Stadt, Ronald W., Professor, *Emeritus*, Ed.D., University of Illinois, 1962; 1967.

Stitt, Thomas R., Professor, *Emeritus*, Ph.D., Ohio State University, 1967; 1967.

Sullivan, James A., Professor, *Emeritus*, Ed.D., West Virginia University, 1967; 1968.

Washburn, John S., Professor, *Emeritus*, Ed.D., University of Illinois, 1977; 1986.

Waugh, Keith, Associate Professor, Ph.D., Virginia Polytechnic Institute and State University, 1996; 1999. Needs assessment, curricula design, delivery, formative and summative evaluations.

The Center for Workforce Development

The Center for Workforce Development was established to create a research, education and training group that provides students and faculty with the opportunity to collaborate on research and development, education and training, and information and product dissemination. The objectives of the Center emphasize:

1. Research and Development - addressing the broad array of issues affecting the nature of the workforce and workplace settings.
2. Education and Training - addressing development and delivery of customized workforce education and training programs/courses in collaboration with agencies and organizations in the public and private sectors.
3. Information and Product Dissemination - addressing the need for dissemination of curriculum and instructional resources useful for promoting work-related education and training.

The Center for Workforce Development will serve as a broker for exchanging and sharing of information and resources associated with the nature of the workplace and workforce. Further, the Center is a catalyst in bringing together leaders from business, research, education and government to interact and work together to formulate public policy associated with workforce development.

The Nurse Aide Testing Project

The Nurse Aide Testing Project is a collaborative, multi-faceted research, education, and innovation project that utilizes the latest technologies to provide training, certification testing, curriculum development, and content delivery to a variety of programs across the SIU campus, the state of Illinois, and the United States. The project was initiated to create and administer the certification exam for Nursing Assistants for the state of Illinois and continues to certify tens of thousands of individuals annually for employment eligibility. This project has seen significant growth over the years, and now it has grown to encompass several other fields of research to include gamification to better engage students, a motion capture laboratory for training development, online course development, specialized video techniques to enhance content delivery, and online training development. The project also includes a Workforce Education Research and Developmental Laboratory whose mission is to enhance the current and future effectiveness of organizations by maximizing the value of human capital through innovative training techniques and staff development.

Degrees Offered

The Department of Workforce Education and Development offers programs of study leading to the Master of Science in Education and Doctor of Philosophy degrees. Information about either program may be obtained by contacting the Office of

Graduate Programs in Workforce Education and Development at wedgrad@siu.edu or 618.453.1960.

This program requires a nonrefundable \$65.00 application fee that must be submitted with the application for Admissions to Graduate Study in Workforce Education and Development. Applicants may pay this fee by credit card, by personal check, cashier's check, or money order made out to SIU, and payable to a U.S. Bank.

Master of Science in Education Degree

The master's degree with a major in workforce education and development is designed to accommodate a broad range of individuals preparing for training, instructional, and administrative roles in career and technical education, human resources, business, industry, government, and other fields. Admission requirements are as follows:

A 2.7 GPA of a completed Bachelor's degree.

A career goal consistent with the mission of the Department,

Relevant professional or technical experience (at least two years is recommended).

For students with a background in training or education, the major consists of a minimum of 32 semester hours of course work for the thesis option and 36 semester hours for the nonthesis option. For students with backgrounds in fields other than education, two foundation courses (WED 486 and 466) are required. These two courses are not counted as part of the required hours for the thesis or non-thesis program. A grade of B or higher is required for each course. Program requirements are organized into professional core requirements and specialty area courses. A grade of B or higher is required for each professional core course, and a 3.0 GPA is required for the specialty area courses.

Professional Core Requirements. For the thesis option, the core consists of 4 courses (14 hours): WED 560, 561, 566, 599 (5 hours). For the non-thesis option, the core consists of 4 courses (12 hours): WED 560, 561, 566, and 593.

Specialty Area Courses. This component consists of 18 hours (thesis option) or 24 hours (non thesis option) of course work relevant to a student's career goals. Technical courses, professional courses, and internships may be included. Courses may be taken within the department or in other units of the college or University.

Thesis. In accordance with Graduate School requirements, students in the thesis option must complete a thesis (WED 599) showing evidence of the student's knowledge of research techniques. Upon completion of the thesis, a final oral examination of the research is conducted by the student's advisory committee.

The program of study is individually tailored based upon the student's background, interests, and career goals. Program graduates are employed in career and technical education at the secondary and postsecondary levels and in training positions in such fields as aviation management, business, automotive technology, family and consumer science, industrial management and applied engineering, agricultural education, and career development. In business environments, graduates

work in employee/industrial/management training, health care administration, and human resource environments. Graduates also work in various levels of government in such fields as education, military service, and personnel training.

Doctor of Philosophy Degree in Education

Advanced studies leading to the Doctor of Philosophy degree in education with a concentration in workforce education and development is offered through the Department of Workforce Education and Development. The concentration is a broad, general leadership and professional development degree that serves professionals having knowledge, experience, and interests in the fields of: (a) career and technical education, (b) career education, (c) employment and training, or related fields.

Persons seeking admission to the program must meet all requirements for admission established by (a) the Graduate School of the University, (b) the College of Education and Human Services, and (c) the Department of Workforce Education and Development. It is required that applicants possess a background of academic and professional experience which will provide a basis for advanced study and research. More specifically, the program is designed for individuals with a background and experience in teaching, program administration, or training and development. Admission to the concentration is determined by a vote of the graduate faculty of the Department of Workforce Education and Development.

The program of study consists of 64 hours beyond the master's degree and includes an 8-hour professional seminar sequence in the College of Education and Human Services, a 15-hour departmental core, 17 hours of supportive studies which may include an internship, research tool competence, and 24 hours of dissertation credit.

Courses (WED)

403-3 Integrating and Managing Technology Applications for Workforce Education & Training. Design of workforce training applications integrating professional advanced features of computer software, communication technologies and multimedia features, including management of educational LAN systems. Restricted to WED majors or consent of department.

404-3 Technology Applications in Workforce Education and Training. Analyses of technology used and demonstration of skill level needed to train others in secondary/postsecondary education and business training environments on technological administrative processes, data management, and curriculum integration. Students will learn advanced computing concepts and applications using integrated software. Prerequisite: WED 403 or equivalent. Restricted to WED majors or consent of department.

405-3 Multimedia-based Instruction for Workforce Education. Acquisition of skills to produce multimedia "assets" (web page, audio/sound bytes) and application of instructional design techniques to computer-based instruction in workforce education. Impact of multimedia on workplaces and workforce training and utilization of course management systems to deliver instruction will be analyzed. Prerequisite: WED 404. Restricted to WED majors or consent of department.

407-3 Administrative Communications and Technology. Application of communication theory, human relations concepts,

and information technology to workplace situations. The process of organizational information for productivity will be stressed. Students will acquire skills to make sound decisions of how to best communicate in work-based situations. Students will learn computerized procedures for communication. Prerequisite: WED 404 or equivalent. Restricted to WED majors or consent of department.

410-3 Issues in Business Training/Education. Study of current issues in business training and education related to history, current status and trends. Organization of instruction, instructional settings, relation to general education, integration and impact of technology, curriculum development/review and evaluation of business training/education impact in the workplace. Restricted to WED majors or consent of department.

413-3 Organizing and Directing Instruction in Secondary Career and Technical Programs. Techniques and procedures applicable to effective teaching including planning for instruction, instructional design technology and general teaching strategies for the secondary career and technical classroom. This course will study pedagogy and utilize various techniques and technology to help students master the skills needed in their respective careers. Students will learn about and practice various teaching methods including demonstrations, cooperative learning, service learning, integration of academics and technology into the workplace-oriented class, project-based learning, and contextual learning. A laboratory section will be required. Limited to Workforce Education and Development students admitted to the teacher education program or one of the career and technical education alternative certification programs in workforce education. Restricted to WED majors or consent of department.

416-3 Instructional Methods in Career and Technical Education. Specific methods, techniques and materials to deliver instruction in (a) Business – accounting, basic business, economics, personal finance, marketing, entrepreneurship; (b) Business – business computer systems, information processing, keyboarding; (c) Family & Consumer Sciences – nutrition, wellness, and hospitality; (d) Family & Consumer Sciences – living environments, apparel, and textiles; (e) Health Careers; (f) Technology Education. This course requires an additional laboratory meeting time. Prerequisite: WED 413 or WED 462. Restricted to WED majors or consent of department.

420-3 Family and Consumer Sciences Profession. A social, psychological, and philosophical interpretation of family and consumer sciences in today's world. Examination of the profession's history, theory and foundation. Overview of career areas and identification of goals and competencies which serve as a basis for decisions to prepare for a wide variety of business, education, and human services-related careers.

426-3 Living Environment and Facility Planning. This course is designed to provide students with resources, activities, and experiences to learn and prepare to teach principles and elements of design as applied to interior design of residential, commercial, and public space environments including textiles, furnishings, and color. Emphasis is on creating a more knowledgeable consumer with focus on project-based implementation and recognition of design principles.

427-3 Resource Management and Consumer Economics for Work and Life. Focus on utilizing resources and consumer

information to address the diverse needs and goals of individuals in areas such as resource management, home ownership, and financial literacy.

460-3 Occupational Analysis and Curriculum Development. System approach to curriculum development. Includes analyzing occupations, specifying objectives and developing curriculum. Restricted to WED majors or consent of department.

461-3 Workforce Education Needs Assessment. Overview of needs assessment and analysis procedures used in workforce education environments. Learners will design and develop needs assessment instruments, collect and diagnose data to identify those workplace performance issues requiring training solutions, and develop a formal report detailing needs assessment findings and training solution recommendations. Restricted to WED majors or consent of department.

462-3 Instructional Methods and Materials. Instructional methods in occupational training program. Restricted to WED majors or consent of department.

463-3 Assessment of Learner Performance. Development and use of evaluation instruments to assess student performance in training classrooms and laboratories. Criterion- and norm-referenced objectives, applications of taxonomies in development of written tests, performance tests and attitude measures. Restricted to WED majors or consent of department.

465-3 The Human Resource Specialist. This course provides an overview of the theoretical frameworks and practices related to human resource management and development. Examines the strategic alignment of human resource functions with organizational goals. Restricted to WED majors or consent of department.

466-3 Foundations of Workforce Education. Examination of the historical, social, economic and psychological foundations of workforce education. Nature and role of education and training in preparing people for the world of work. Restricted to WED majors or consent of department. Course material fee: \$126.

467-3 Theory and Practice of HRD. Students will examine different factors that influence, direct and shape the functions of human resource development (HRD) in organizations. Topics include models, theoretical foundations, and philosophical perspectives within HRD, an overview of the HRD functions within organizations, and the various roles HRD can play within organizations. Restricted to WED majors or consent of department.

469-3 Training Systems Management. Insight and understanding of administration and management of organizational training. Principles and techniques of managing training organizations. Process of planning, organizing, marketing, programming, staffing, budgeting and evaluating a training organization. Restricted to WED majors or consent of department.

470-3 Trends and Issues in Quality Systems Management in Education. This course provides an overview of the economic basis of and trends and issues relevant to Quality Systems Management in Education. The course examines compliance models and criteria models for quality systems. Concentration will be on ISO 9000:2000 series model requirements with specific emphasis on internal audits, documentation, implementation and registration. Restricted to WED majors or consent of department.

472-3 Organizing Cooperative Education. Introduction to cooperative education including history, rationale, legislation, goals and objectives. Programming, public relations and evaluation of cooperative education. Introduction of student selection and management of cooperative education programs. Fulfills three semester hours of six required for State of Illinois certification. Restricted to WED majors or consent of department.

473-3 Coordinating Cooperative Education. Competencies required for coordination of cooperative education programs. Selection and maintenance of training stations, student placement, related instruction and program management. Fulfills the remaining three semester hours required for State of Illinois certification. Restricted to WED majors or consent of department.

474-3 Preparing Instructional Materials. Preparation of instructional materials needed by a student to attain a learning objective. Includes writing and developing various types of instruction sheets, presentation guides, knowledge tests and demonstration, practice and performance evaluation materials. Prerequisite: WED 460 completed with a grade of C or better or consent of instructor.

486-3 Adult Learning. Course focus is on adult development and learning principles. Adult learning styles and motivation to learn are discussed in the context of designing effective instructional strategies appropriate in various workforce education venues. Restricted to WED majors or consent of department.

490-1 to 4 Readings. Supervised reading for qualified students in Workforce Education and Development. Restricted to Workforce Education and Development majors or consent of department. Special approval needed from the instructor.

491-1 to 5 Advanced Occupational Skills. Modern occupational practice in selected fields for experienced professionals seeking advanced techniques. Restricted to WED majors or consent of department. Special approval needed from the instructor.

494-1 to 4 Workshop. Current workforce education issues for teachers, supervisors, and administrators. Emphasis of each workshop will be identified in workshop announcements. Restricted to WED majors or consent of department.

497-1 to 6 Practicum. Applications of work education skills and knowledge. Cooperative arrangements with corporations and professional agencies to study under specialists. Prerequisite: twenty hours in specialty. Restricted to WED majors or consent of department.

498-1 to 6 Special Problems. Investigation of problems in workforce education and development. Restricted to WED majors and consent of department. Special approval needed from the instructor.

504-3 Multimedia Production Technologies in Workforce Education. Application of multimedia technologies—graphics, text, video, audio, on-screen buttons and other event triggers—into workforce education delivery systems. Students will work as a team in designing, developing, editing, and delivering interactive multimedia instructional training products. Prerequisites: WED 405. Restricted to WED majors or consent of department.

505-3 Multimedia Delivery of Workforce Education by Distance Learning. Focuses on the use of distance learning

and multimedia technologies in the delivery of instruction of workforce education and development settings. Course participants will design and deliver instruction for the distance education environment-individually and in groups. Advanced video conference technologies are emphasized. Prerequisite: WED 404 or equivalent. Restricted to WED majors or consent of department.

511-3 Instructional Trends in Workforce Education Programs. Examination of research relating to instructional emphases and strategies unique to career and technical training programs, corporate training programs, and adult education. Restricted to WED majors or consent of department.

551-3 Employment Law in Human Resource Development. Examines current and practical information in the area of employment law as it relates to human resource development in organizations. Focus is on helping organizations avoid liability through HRD interventions. Restricted to Workforce Education and Development majors or consent of department.

552-3 Recruitment, Selection & Compensation: Impact of HRD. Overview of the theoretical frameworks and practice related to recruitment, selection and compensation. Examines impact of these HR theories and practice on human resource development in organizations. Prerequisite: WED 465 The Human Resource Specialist. Restricted to WED majors or consent of department.

553-3 Emerging Trends in HRD. Examination of current topics and research issues in the field of Human Resource Development not covered in other regularly scheduled courses. Emphasis will be on recent and present issues in the field, with topics and discussions focused on links between research and practice. Prerequisite: WED 465 The Human Resource Specialist. Restricted to WED majors or consent of department.

560-3 Introduction to Workforce Development Research. This course provides an exploration of the scope, values, and purposes of research in workforce development. Focus is on (a) identifying how theory and research are practical tools to solve workforce development challenges that practitioners face on a daily basis; (b) analyzing research articles, and (c) developing academic writing skills. Restricted to WED majors or consent of department.

561-3 Research Methods. Basic research methods and techniques in the design, investigation and reporting of research studies relating to education for work. Prerequisite: WED 560. Restricted to WED majors or consent of department.

563-3 Training Measurement and Evaluation. Evaluation systems and activities for evaluating training programs. Application of research methods and data analysis in the human resource development process, with concentration on assessing trainee reaction and planned action, learning, skill, business impact and return on training investment. Prerequisite: WED 463. Restricted to WED majors or consent of department.

564-3 Program Evaluation for Work Education. Evaluation systems and activities for evaluating national, state, and local work education programs. Systems include programmatic accreditation and state agency evaluations. Activities include personnel, facilities, access and equity, community resources and community needs evaluations. Restricted to WED majors to consent of department.

566-3 Administration and Supervision. Nature, function, and techniques of administration and supervision of education

for work programs at all levels. Restricted to WED majors or consent of department.

574-3 Occupational Information. The role of instructional and supervisory personnel in the total occupational information system. Kindergarten to adult. Restricted to WED majors or consent of department.

576-6 (3,3) Policy Implementation and Supervision. Planning, implementing, and controlling local education agency components of state and federal occupational programs. **(a)** Objective program planning, leadership, communications. **(b)** Management information systems, financial decisions, staffing patterns. Restricted to WED majors or consent of department.

581-3 Workforce Diversity. Foundational information concerning a diverse/multicultural society. Importance of understanding cultural and demographic similarities/differences and how this information relates to the workplace and to education/training environments. Social diversity issues of current importance to workforce preparation and development of diversity training are included. Restricted to WED majors or consent of department.

584-3 Curriculum Foundations for Work Education. Acquaints students with different factors that influence, direct, and shape curriculum as it pertains to the work-oriented aspects of school and society. Topics include law and the curriculum, philosophies and organizational models, differing approaches by grade level and setting, and the development of work-related curriculum. Restricted to WED majors or consent of department.

585A-E-3 Seminar in Workforce Education and Development. A series of seminars for scholarly inquiry into significant aspects of Workforce Education and Development. Students will have opportunity to discuss issues in the following topic areas; **(a)** Facilitating Diversity Initiatives **(b)** Workforce Education Research to Practice **(c)** Discussion as a Method of Teaching and Training Adults **(d)** Job Stress **(e)** Work Motivation. Restricted to WED majors or consent of department.

586-3 Developing Program for Adult Learners. Overview of current organizational patterns of adult programs and analysis of program delivery systems. Students will develop advanced skills in planning and designing programs for adults in workforce education environments. Prerequisite: WED 486. Restricted to WED majors or consent of department.

590-1 to 9 Readings. Supervised readings in selected advanced subjects. Restricted to WED majors or consent of Department. Special approval needed from the instructor.

591-1 to 9 New Developments. Recent developments and trends in various aspects of education for work. Instruction provided by recognized authorities. Restricted to WED majors or consent of department.

592-3 Current Issues and Research. Examination of broad topics, issues, and research not covered in other regularly scheduled courses. Emphasis will be on recent and present issues, which are in the process of evolving. Content will be selected from three primary professional fields: **(a)** Vocational/technical education, **(b)** Employment and training, and **(c)** Career education. Required of all Ph.D. students. Restricted to WED majors or consent of department.

593-3 Individual Research. The selection and investigation of a research topic culminating in a paper satisfying the research requirement for a Master of Science in Education degree.

Prerequisite: WED 561. Restricted to WED majors or consent of department.

594-3 Advanced Research Methods. Development of research competencies and preparation of proposal for thesis or dissertation research. Familiarity with research in various foundation areas of education for work. Prerequisite: WED 592. Restricted to WED majors or consent of department.

595-1 to 16 Professional Internship. Supervised professional experience in appropriate educational settings. May be done on- or off-campus. Restricted to WED majors or consent of department.

597-3 (1,1,1) Doctoral Seminar in Workforce Education. Designed to provide doctoral students the opportunity to discuss and practice major professional roles in workforce education and development. Requirements of teaching, research, publication, and service are defined. Students will accomplish identified professional expectations in **(a)** Orientation to Doctoral Study; **(b)** Research Publications and Presentations; **(c)** Grantmanship. Restricted to admission to the Ph.D. in education program. Restricted to WED majors or consent of Department.

598-1 to 6 Special Investigations. Selection and investigation of a problem: use of relevant sources and techniques; collection and analysis, evaluation, interpretation of data, and the writing of a report of the investigation for students whose particular needs are not met by existing classes. Restricted to WED majors or consent of Department. Special approval needed from the instructor.

599-1 to 6 Thesis. Prerequisite: WED 561. Restricted to WED majors or consent of department.

600-1 to 36 (1 to 12 per semester) Dissertation. Restricted to WED majors or consent of department.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only. Restricted to WED majors or consent of department.

Zoology

<http://www.zoology.siu.edu/>
zoology@zoology.siu.edu

COLLEGE OF SCIENCE

Graduate Faculty:

Anderson, Frank E., Associate Professor, Ph.D., University of California, Santa Cruz, 1998; 1999. Invertebrates; molecular systematics, molecular evolution.

Anthoney, Terence R., Associate Professor, *Emeritus*, M.D., University of Chicago, 1968; and Ph.D., University of Chicago, 1975; 1971.

Boyles, Justin G., Assistant Professor, Ph.D., Indiana State University, 2009; 2011. Conservation physiology.

Brandon, Ronald A., Professor, *Emeritus*, Ph.D., University of Illinois, 1962; 1963.

Brooks, Marjorie, Associate Professor, Ph.D., University of Wyoming, 2003; 2009. Limnology; biogeochemistry; toxicology.

Brown, Jason L., Assistant Professor, Ph.D., East Carolina University, 2009; 2016. Integrated ecological, evolutionary, genetic, and geospatial analysis.

Burr, Brooks M., Professor, *Emeritus*, Ph.D., University of Illinois, 1977; 1977.

Catenazzi, Alessandro, Assistant Professor, Ph.D., Florida International University, 2006; 2012. Amphibian conservation.

Chen, Da., Assistant Professor, Ph.D., College of William and Mary, 2009; 2011. Wildlife toxicology.

Eichholz, Michael W., Associate Professor, Ph.D., University of Alaska, 1998; 2002. Waterfowl, wetland ecology.

Englert, DuWayne C., Professor, *Emeritus*, Ph.D., Purdue University, 1964; 1963.

Feldhamer, George A., Professor, *Emeritus*, Ph.D., Oregon State University, 1977; 1984.

Garvey, James E., Professor, Ph.D., Ohio State University, 1997; 2000. Fisheries biology.

Halbrook, Richard S., Associate Professor, *Emeritus*, Ph.D., Virginia Polytechnic Institute and State University, 1990; 1993.

Heidinger, Roy C., Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1970; 1970.

Heist, Edward J., Professor, Ph.D., College of William and Mary, 1994; 1998. Population genetics; conservation genetics; fishery management.

Ibrahim, Kamal, Associate Professor and *Director of Graduate Studies*, Ph.D., Cambridge University, 1989; 2001. Population genetics.

Jimenez-Ruiz, F. Agustin, Associate Professor, Ph.D., University of Nebraska-Lincoln, 2004; 2009. Parasitology.

King, David G., Associate Professor, *Emeritus*, Ph.D., University of California, San Diego, 1975; 1977.

Kohler, Christopher C., Professor, *Emeritus*, Ph.D., Virginia Polytechnic Institute, 1980; 1981.

Krajewski, Carey, Professor and *Chair*, Ph.D., University of Wisconsin-Madison, 1988; 1990. Vertebrate molecular systematics.

LeFebvre, Eugene A., Associate Professor, *Emeritus*, Ph.D., University of Minnesota, 1962; 1966.

Lovvorn, James R., Professor, Ph.D., University of Wisconsin-

Madison, 1987; 2009. Waterbird ecology; food webs.

Lydy, Michael J., Professor, Ph.D., Ohio State University, 2001. Aquatic toxicology.

McPherson, John E., Jr., Professor, *Emeritus*, Ph.D., Michigan State University, 1968; 1969.

Muhlach, William L., Associate Professor *Emeritus*, Ph.D., University of Illinois at Chicago, 1986; 1987.

Nielsen, Clay, Adjunct Professor, Ph.D., Southern Illinois University Carbondale, 2001; 2003. Wildlife ecology and management.

Reeve, John, Associate Professor, Ph.D., University of California Santa Barbara, 1985; 2000. Quantitative ecology.

Schauber, Eric M., Associate Professor, Ph.D., University of Connecticut, 2000; 2002. Wildlife ecology.

Shepherd, Benjamin A., Professor, *Emeritus*, Ph.D., Kansas State University, 1970; 1969.

Sparling, Donald W., Associate Professor, *Emeritus*, Ph.D., University of North Dakota, 1979; 2004.

Stahl, John B., Associate Professor, *Emeritus*, Ph.D., Indiana University, 1958; 1966.

Thomas, Richard H., Associate Professor, Ph.D., University of Arizona, 1985; 2004. Molecular evolution.

Waring, George H., Professor, *Emeritus*, Ph.D., Colorado State University, 1966; 1966.

Warne, Robin W., Assistant Professor, Ph.D., University of New Mexico, 2008; 2011. Physiological ecology.

Whiles, Matt R., Professor, Ph.D., University of Georgia, 1995; 1999. Stream ecology; freshwater invertebrates; entomology.

Whitledge, Gregory, Associate Professor, Ph.D., University of Missouri, 2001; 2995. Fish ecology and management.

The Department of Zoology's offers graduate programs leading to the Master of Science and Doctor of Philosophy degrees. These degrees are awarded on the basis of demonstrated scholarship, with an emphasis on the ability to organize, conduct, and report original research. The department's graduate program is organized around five disciplinary areas: ecology & ecosystem studies; environmental toxicology; evolution, genetics, and population biology; fisheries biology & aquaculture; and wildlife ecology & management. These research groups draw heavily upon the expertise of faculty members affiliated with SIU's Center for Fisheries, Aquaculture, and Aquatic Sciences, Cooperative Wildlife Research Laboratory, and Center for Ecology. Graduate research in Zoology is facilitated by SIU's geographic location, notably its proximity to extensive national forests, wildlife refuges, state parks, and other natural areas of diverse physiography.

Admission

Application forms can be obtained via the departmental webpage (<http://www.zoology.siu.edu/>). A completed departmental application includes the form, transcripts of all previous college credits, an official score report for the Graduate Record Examination (GRE) General Test, and three letters of evaluation that address the applicant's academic abilities. A nonrefundable application fee must be submitted with the departmental application form. Applicants pay this fee when applying electronically to the Graduate School. Students who wish to be considered for a University fellowship must have a

complete application on file by December 1. There are no other application deadlines, but early contact with the department is encouraged.

Applicants for both M.S. and Ph.D. programs must fulfill all admissions requirements of the Graduate School. Inquiries about Zoology graduate program should be made to the Director of Graduate Studies in Zoology. More information is available on the department's website (<http://www.zoology.siu.edu/graduate/index.php>). Prospective applicants are strongly encouraged to make contact with faculty members in their area of research interest prior to submitting an application.

Applicants to the master's program must possess the following academic background: 24 semester hours (or equivalent) in courses covering the basic principles of zoology (including animal diversity, genetics, ecology, and evolution); one year of college chemistry (organic and biochemistry are also desirable); one year of college mathematics including college algebra and trigonometry (calculus and statistics are also desirable); an undergraduate grade point average of at least 2.70 ($A = 4.0$). Applicants with a GPA less than 2.70 will be considered on individual merit.

Applicants for the doctoral degree must have a solid background in biological science, hold a master's degree, and have a grade point average in graduate work of 3.25 or above. Applicants with a graduate GPA less than 3.25 will be considered on individual merit. Direct entry to the doctoral program for students with only a bachelor's degree, or accelerated entry from the master's program, is possible for students demonstrating exceptional potential.

Advisement and Progress Toward Degree

During the admission process and prior to registration, a student should consult with faculty members representing his or her area of interest to identify an advisor. Advisors will be assigned formally by the Director of Graduate Studies upon admission. A change in advisor later in the program must be coordinated and approved by the Director of Graduate Studies.

Each student, in consultation with the advisor, must assemble an advisory committee to be approved by the Director of Graduate Studies before the end of the first semester of enrollment. For the master's degree, the committee shall consist of at least three graduate faculty members, one of whom may be from outside the department, with the advisor serving as chair. For the doctoral degree, the advisory committee shall consist of five graduate faculty members, one of whom must be from outside the department, with the advisor serving as chair. Master's committees may have no more than one adjunct member; Ph.D. committees may have no more than two adjunct members. All adjunct members of graduate committees must have a Ph.D. A program of study must be approved by the advisory committee and submitted to the Director of Graduate Studies no later than second semester of enrollment. A research proposal must be approved by the advisory committee and submitted to the Director of Graduate Studies no later than the third semester. Students may not register for ZOOL 599 or 600 before their proposal is approved.

Master of Science Degree

All requirements of the Graduate School must be satisfied.

At least 30 hours of graduate credit (15 hours at the 500 level) is required beyond the bachelor's degree, including 21 hours of graded coursework, 2 hours of ZOOL 589, 6 hours of ZOOL 599, and two or more courses in a specific area representing the research tool. A grade-point average of 3.00 in graduate coursework must be maintained. Failure to meet this requirement will result in academic probation and loss of financial support from the department.

Thesis. Students must prepare and defend a thesis based on the results of original research. The nature of the research is developed by the student in consultation with the advisor and advisory committee. The thesis is evaluated by the advisory committee and must be successfully defended before graduation. The defense consists of a presentation of thesis results in public seminar, followed by a closed session of oral evaluation by the advisory committee. A final version of the thesis must be approved by the advisory committee, the Director of Graduate Studies, the Department Chair, and the Graduate School. M.S. candidates must follow all Graduate School procedures in applying for graduation and deposit one bound copy of their thesis with the department.

Doctor of Philosophy Degree

All requirements of the Graduate School must be satisfied. Students entering the doctoral program are expected to have taken courses in the broad areas of animal diversity & evolution, ecology, and cell biology & genetics. Admission to the Ph.D. program requires two courses in two of these areas and three courses in the third. Students may be admitted with deficiencies, but must acquire the necessary coursework as part of their doctoral studies.

There is no minimum credit-hour requirement beyond the Graduate School's residency and dissertation requirements. A student, in consultation with his or her advisory committee, prepares a program of study that includes courses (including two semesters of ZOOL 589), seminars, and research. A research tool, consisting of at least two courses in a specific subject area, is required. A 3.25 grade point average in graduate coursework must be maintained. Failure to meet this requirement will result in loss of financial support from the department.

Preliminary Examinations. Written and oral examinations are taken after the tool requirement and major portion of any other formal coursework are completed, usually at the end of the second year of graduate study. The examinations focus on the student's area of research expertise as defined by the student, the advisor, and the advisory committee, and approved by the Director of Graduate Studies and the Department Chair. Administration and evaluation of these examinations is governed by the department's Preliminary Examination Policy. Students must pass both preliminary examinations to advance to candidacy.

Dissertation. Students must prepare and defend a dissertation based on the results of original research. The nature of the research is developed by the student in consultation with the advisor and advisory committee. Students must register for at least 24 hours of ZOOL 600 Research and Dissertation (only 6 hours are permitted prior to candidacy). The dissertation is evaluated by the advisory committee.

Final Examination. With the approval of the advisory committee, the candidate requests the Director of Graduate Studies to schedule a dissertation defense. The defense consists of a presentation of dissertation results in a public seminar, followed by a closed session of oral evaluation of the student's dissertation research by the advisory committee. A final version of the dissertation must be approved by the advisory committee, the Director of Graduate Studies, the Department Chair, and the Graduate School.

Graduation. Ph.D. candidates must follow all Graduate School procedures in applying for graduation and deposit one bound copy of their dissertation with the department.

Concentration in Ecology. Students opting to declare Ecology as a concentration shall follow the same program as students in the Zoology Ph.D. degree program that do not declare a concentration subject to the following: The Seminar in Ecology (PLB 589A) or equivalent (equivalent agreed upon by the student's committee) must be taken once each year until a student achieves candidacy. The research tool shall be statistics. The student's advisory committee shall consist of at least two members from outside the Department of Zoology.

Courses (ZOOL)

Students enrolled in zoology courses may incur field trip or laboratory expenses of \$5 to \$25.

405-3 Systematic Zoology. Estimation, analysis, and interpretation of phylogenetic trees; concepts, delimitation, and description of species; biological taxonomy and systems of classification; application of phylogenetics to the study of evolution. Prerequisite: BIOL 304, MATH 108, and ZOOL 220 with grades of C or better. .

407-4 Parasitology. Principles, collection, identification, morphology, life histories, and control measures. Two lectures and two 2-hour laboratories per week. Prerequisite: ANTH 240A or MICR 301 or PHSL 310 or ZOOL 220. Laboratory/Field Trip Fee: \$15.

408-3 Herpetology. Taxonomic groups, identification, morphology, and natural history of amphibians and reptiles. One lecture and two 2-hour laboratories per week. Laboratory/field trip fee: \$15. Prerequisite: 220B or 220.

409-4 Vertebrate Histology. Microscopic structure of organs and tissues with emphasis on mammalian material. Two lectures and two 2-hour labs per week. Laboratory/field trip fee: \$15. Prerequisite: 220 A, B or 220.

410-3 Conservation Biology. An introduction to patterns of global biodiversity and threats to that diversity. Course emphasizes how principles from numerous biological disciplines are involved in conserving and managing biodiversity, and how social, economic and political factors affect conservation strategies. Prerequisite: BIOL 307 and MATH 108 with grades of C or better.

411-3 Environmental Risk Assessment. Risk assessment can be defined as the process of assigning magnitudes and probabilities to the adverse effects of human activities or natural catastrophes. Prerequisite: ZOOL 220, BIOL 307 and CHEM 340.

413-4 The Invertebrates. Structure, phylogeny, distinguishing

features and habitats of the invertebrates. Two lectures and two 2-hour laboratories per week. Laboratory/field trip fee: \$15. Prerequisite: 220A or 220.

414-4 Freshwater Invertebrates. Taxonomic groups, identification, distribution and habitats of the North American freshwater invertebrate fauna. Two lectures, two 2-hour laboratories per week. Laboratory/field trip fee: \$15. Prerequisite: 220A or 220.

415-3 Limnology. (Same as PLB 416) Lakes and inland waters; the organisms living in them, and the factors affecting these organisms. Two lectures and one 4-hour laboratory alternate weeks. Prerequisite: BIOL 307 with a grade of C or better. Laboratory/Field Trip Fee: \$15.

418-3 Vertebrate Anatomy Laboratory. Comparative anatomy and dissection of representative vertebrate specimens. Three 2-hour laboratories per week. Prerequisite: ZOOL 220 with grade of C or better. Prior or concurrent registration in ZOOL 320 recommended. Laboratory/field trip fee: \$30.

425-3 Invertebrate Paleontology and Paleocology. (Same as GEOL 425) Concepts of paleontology and paleocology. Emphasis on functional morphology, lifestyles and habitats of fossil invertebrates and algae. The nature and evolution of marine and coastal paleocommunities. The effects of extinction events on paleocommunities and biodiversity. Laboratory. Field trips required. Prerequisite: GEOL 325 or ZOOL 220 with grade of C or better. Field trip fee: \$95. Lab fee: \$5.

426-3 Comparative Endocrinology. (Same as ANS 426, PHSL 426) Comparison of mechanisms influencing hormone release, hormone biosynthesis, and the effects of hormones on target tissues, including mechanisms of transport, receptor kinetics, and signal transduction. Prerequisites: ANS 331 or ZOOL 220 or PHSL 310 with a grade of C. Laboratory/Field Trip Fee: \$15.

432-3 Principles of Toxicology. This course will introduce students to the main topics in the field of Toxicology. The emphasis will be on understanding physiological, biochemical and molecular mechanisms of toxicity. Prerequisite: ZOOL 220.

433-3 Comparative Animal Physiology. (Same as PHSL 433) Variations of physiological processes in animal phyla, comparison with human physiology, and review of basic physiology principles and comparative aspects of mechanism and function. Prerequisites: BIOL 200A; BIOL 200B or PHSL 310 with grades of C or better.

434-3 Environmental Physiology. (Same as PHSL 434) Physiological adaptations to environmental conditions in animals and humans. Lab/lecture course explores molecular, hormonal, immunological, developmental, and phenotypic processes mediating responses to factors such as stress, disease, contaminants, nutrition, and life history trade-offs. Prerequisites: BIOL 307 or PHSL 310 or ZOOL 433 with a grade of C or better. Laboratory/field trip fee \$20.

435-3 Plant-Insect Interaction. (Same as PLB 435) Plants and insects have played major roles in influencing each other's evolutionary diversification. This course will be an evolutionary and ecological examination of the interactions between plants and insects. Topics will include herbivory, pollination relationships, ant-plant mutualisms, host plant choice, specialized vs. generalized relationships, seed and fruit dispersal, coevolution/cospeciation, and chemical ecology. Prerequisite: Biology 200A, B or equivalent; BIOL 307 or

equivalent.

438-3 Plant and Animal Molecular Genetics Laboratory. (Same as PLB 438, PSAS 438, AGSE 438, AND CSEM 438) Arabidopsis and Drosophila model organisms, training in laboratory safety, reagent preparation, phenotype analysis, genetics, DNA and RNA analysis, PCR, cDNA construction, cloning and sequencing. Includes plant and bacterial transformation, and a population level analysis of genetic variation using RAPD markers in grasses and Alu insertion in humans. Two 2-hr labs and one 1-hr lecture per week. Prerequisites: BIOL 305 or equivalent or consent of instructor. Lab fee: \$30.

440-3 Wildlife Nutritional Ecology. This course will provide an understanding of basic nutritional principles (including foraging, digestion, absorption, metabolism, and requirements), demonstrate their application to ecological relationships of wild terrestrial vertebrates with their environment, and stimulate students to critically evaluate published literature in this field of study. Prerequisite: BIOL 307.

443-3 Restoration Ecology. (Same as PLB 443) Ecological restoration tests current understanding of ecosystem assembly and function. This course applies ecological theory to restoration, with an emphasis on factors influencing plant community assembly and evaluating restoration success. Two lectures a week and one four-hour lab alternate weeks. Prerequisite: BIOL 307 or equivalent.

444-4 Ecological Analysis of Communities. (Same as PLB 444) Includes concepts and methods pertaining to the analysis of ecological data. Approaches will include a variety of methods for analyzing multivariate ecology, diversity, pattern, and spatial data. Laboratory will include the computer application of these concepts and methods to field situations. Two lectures and one 4 hour lab per week. Prerequisite: PLB/ZOOL 360, BIOL 307. Lab fee: \$15.

445-4 Wetland Ecology and Management. (Same as PLB 445) This course provides students with experience in wetland ecology and management with an emphasis on wetland functioning, field sampling, and identification of common wetland plants. Prerequisite: either BIOL 200 or PLB 200; and BIOL 307; or consent of instructor. Two lectures and one 4-hour lab per week. Lab Fee: \$25.

450-3 Genome Evolution. (Same as PLB 445) This course introduces the diversity of genomes and the evolutionary forces shaping them. Molecular evolution from the level of single nucleotides to whole genomes will be covered. Prerequisites: BIOL 304 and BIOL 305.

458-3 Multiple Stressors in Ecology. In this class, students will use a step-by-step approach to evaluate an environmental issue or human concern compounded by climate change. The evaluation will begin with a conceptual model of the problem, followed by planned management strategies based on collaborative decision making. This class is designed to foster quantitative reasoning, include that reasoning in research, and articulate findings in terms that foster collaborative management and outreach. Examples of potential projects include climate change impacts in concert with: disease propagation, habitat quality and quantity, pollutant uptake in ectotherms, coral bleaching, changing human coastal communities, or fire incidence. Prerequisite: BIOL 307 with a grade of C or better.

461-3 Mammalogy. Taxonomic characteristics, identification,

and natural history of mammals. Two one-hour lectures and one two-hour laboratory per week. Laboratory/field trip fee: \$10. Prerequisite: 220B or 220.

462A-2 Waterfowl Ecology and Management (Lecture). This class will explore the pertinence of basic life history theory and ecological principles to waterfowl management. Lecture topics include but are not limited to waterfowl life histories (i.e., productivity and mortality), foraging ecology, nutrition, habitat use, habitat management, migration, and the influence of harvest. Prerequisites: ZOOL 220, BIOL 307 with minimum grades of C. Co-requisite: ZOOL 462B.

462B-1 Waterfowl Ecology and Management (laboratory). This laboratory will meet one day/week for two hours. The primary objective will be waterfowl identification with a secondary emphasis on wetland plant identification and field techniques in waterfowl research and management. There will be 2-3 Saturday field trips. Laboratory/field trip fee: \$20. Prerequisites: none.

463-3 Management and Conservation of Mammals. Course objectives include introducing the history and principles of management for mammalian species; providing an overview of the life history, ecology, and management of mammals of conservation concern in North America; and developing oral and written presentation skills through critical evaluation of management-related research and activities on mammals in North America. Prerequisite: ZOOL 220 with a grade of C or better. Laboratory/Field Trip Fee: \$10.

464-3 Wildlife Administration and Policy. Responsibilities of private, state, and federal natural resources management agencies. Legal and political processes in areas of wildlife and natural resources. Three lecture per week. Special approval needed from the instructor.

465-3 Ichthyology. Anatomy, physiology, sensory biology, behavior, taxonomy, evolution, zoogeography, and ecology of fishes. Two lectures and one 2-hour laboratory per week. Prerequisites: ZOOL 220 with a grade of C or better. Laboratory/Field trip fee: \$10.

466-3 Fish Management. Sampling, age and growth, dynamics, habitat improvement, manipulation of fish populations, and management of freshwater and marine fish stocks. Two lectures per week and one four-hour laboratory alternate weeks. Offered Fall term. Prerequisite: ten hours of biological science or consent of instructor.

467-3 Ornithology. Classification and recognition of birds and the study of their songs, nests, migratory habits and other behavior. One lecture and one four-hour laboratory per week. Laboratory/field trip fee: \$10. Prerequisite: 220B or 220.

468-3 Wildlife Biology Principles. Basic concepts of wildlife ecology and management. Includes lectures on ecological physiology, population dynamics and wildlife management strategies. Prerequisite: ZOOL 220, BIOL 307.

469-3 Wildlife Techniques. Field-oriented course with instruction in techniques for management of wild species and their habitat. One 1 1/2-hour lecture and one 3-hour laboratory per week, two of which may be field trips on Saturdays. Laboratory/field trip fee: \$30. Prerequisite: 220 A, B or 220.

471-4 Entomology. Structure, classification, and life histories of insects. Two lectures and two 2-hour laboratories per week. Laboratory/field trip fee: \$10. Prerequisite: 220A or 220.

472-3 Introduction to Systems Biology. (Same as PLB 471)

The experimental and bioinformatics analysis of large genomic and post-genomic data sets. The goal is integration of gene regulation, protein interaction, metabolite and hormonal signaling molecules into an understanding of basic cellular circuitry networks. Examine redundancy, robustness and decision making in biological systems. Prerequisite: BIOL 305 or CS 330. Lab fee: \$15.

473-4 Aquatic Entomology. Structure, classification and biology of aquatic insects. Two lectures and two 2-hour laboratories per week. Laboratory/field trip fee: \$10. Prerequisite: 220A or 220.

477-3 Aquaculture. (Same as ANS 477) Production of food, game and bait fishes. Design of facilities, chemical and biological variables, spawning techniques, diseases and nutrition. Two lectures per week and one four-hour laboratory on alternate weeks. Prerequisite: BIOL 200A or ZOOL 118 or ANS 121 with grade of C or better.

478-3 Animal Behavior. Biological basis of the behavior of animals. Two lectures and one two-hour laboratory per week. Prerequisite: one year of biological science or permission of instructor.

485-2 to 4 Special Topics in Zoology. Examination of topics of special interest not available in other departmental courses. Offered in response to student need and faculty availability. Special approval needed of instructor.

490-3 Energetics, Food Webs, and Ecosystems. (Same as PLB 490) This course places conservation of particular species into the context of community and ecosystem management. Approaches to qualifying energy needs of individual species will be extended to models of trophic networks among multiple species. Food web structure and function, species interactions, and resilience to species loss species invasions, and environmental changes will be examined in light of landscape processes. Prerequisite: BIOL 307 or consent of instructor.

510-3 Evolutionary Biology. An introductory survey of evolutionary biology at the graduate level, emphasizing conceptual issues in evolutionary genetics, adaptation, systematics, and macroevolution. Prerequisite: BIOL 305 or equivalent.

521-3 Stream Ecology. The physical, chemical, and biological factors affecting organisms in streams. Two lectures per week and one four-hour laboratory alternate weeks. Prerequisite: ZOOL 415. Special approval needed from the instructor.

523-3 Watershed Science. (Same as PLB 523) This course is part the SIU IGERT program and will focus on ecological, geomorphic, and hydrological concepts related to watersheds including hydrograph generation, frequency analysis, erosional and depositional processes, channel geomorphology, water quality and biotic integrity, and structure and function of stream ecosystems. This course will include readings and discussions and will feature guest lectures on specific topics. Restricted to graduate students (masters and doctoral).

530-3 Wildlife Diseases. Introduction to the causes and nature of diseases of wildlife with emphasis on wild mammals and birds. The relationship of disease to the population ecology of species will be emphasized further. Two lectures and one two-hour laboratory per week. Offered Spring term. Special approval needed from the instructor.

532-3 Wildlife Toxicology. Fate and effects of environmental

toxicants in wildlife. Review of descriptive and mechanistic toxicology for environmental contaminants. Investigation of the relationship between individual and community responses to toxicant exposure. Examination of current hazard assessment protocols and associated regulatory agencies. Prerequisite: ZOOL 468 or consent of instructor.

533-4 Aquatic Toxicology. This course will provide an overview of concepts and methodology for conducting tests in the field of aquatic toxicology. Specific topics to be covered include: acute and chronic bioassays, bioaccumulation tests including biotransformation processes and toxicokinetics, and modeling techniques using Quantitative Structure Activity Relationships and fugacity modeling. This class is recommended for students interested in learning about the applied methodology used in the rapidly evolving field of aquatic toxicology. Prerequisite: BIOL 307 and CHEM 340 or equivalent, or instructor's permission.

534-3 Wildlife Habitat Analysis. Physical, biological and behavioral factors that influence habitat use and selection by wild vertebrate populations. Landscape level analysis of wildlife habitats. Modeling habitat suitability, environmental impact and wildlife population dynamics with habitat data. Application and use of remote sensing and geographic information systems in natural resource management and habitat evaluation. One two-hour lecture and one two-hour laboratory per week. Special approval needed from the instructor.

540-3 Stable Isotopes in Ecology. This course will introduce students to fundamentals of stable isotope biogeochemistry, analytical techniques, and interpretation and analysis of stable isotope data. Students will become acquainted with a diverse array of applications of stable isotopes in ecological research in terrestrial and aquatic systems. Two lectures or discussions per week. Prerequisite: 6 hours of chemistry, 10 hours of biological science. Special approval needed from instructor.

545-3 Ecosystem Ecology. (Same as PLB 545) Fundamentals of and human modification to atmospheric chemistry and cycling of major nutrients in terrestrial ecosystems are covered in the context of global change. Laboratory exercises provide methodology and analytical approaches to studying ecosystem structure and function. Two lectures a week and one four-hour lab alternate weeks.

550-3 Analysis of Vertebrate Populations. This course provides instruction in the estimation of demographic parameters including but not limited to occurrence, abundance, mortality, birth, growth, philopatry, emigration, and immigration. Students will be introduced to and provided detailed instruction in the use of Program MARK to analyze data from individually marked organisms. Prerequisite: a course in statistics.

554-1 to 4 (1 per semester) Evolution Seminar. (Same as ANTH 554, MBMB 554, PLB 554) Advanced topics in evolutionary biology including genetics & development, evolutionary ecology, phylogeny, paleontology, biogeography, population genetics, molecular ecology, speciation, molecular evolution, and macroevolution. Topics will vary each semester. Seminar format with group discussions and student presentations. Graded S/U. Special approval needed from the instructor.

556-3 Phylogenetics. (Same as ANTH 556, MBMB 556, and PLB 556) An advanced introduction to modern methods of phylogenetic inference, emphasizing both theoretical background concepts and numerical approaches to data

analysis. Topics include properties of morphological and molecular characters, models of character evolution, tree estimation procedures, and tree-based testing of evolutionary hypotheses. Special approval needed from the instructor.

557-4 Biostatistics. (Same as PLB 557) Basic biostatistics procedures used by researchers in life sciences and related fields. Topics include descriptive statistics, probability and distributions, statistical models, likelihood methods, experimental design, analysis of variance, regression, correlation, and the use of statistical software.

558-4 Advanced Biostatistics. (Same as PLB 558) Advanced biostatistical procedures used by researchers in life sciences and related fields. Topics include multiple and logistic regression, randomization tests, jackknife and bootstrap, Mantel tests, BACI designs, MANOVA, repeated measures analysis and the use of statistical software. Prerequisite: ZOOL 557, PLB 557 or equivalent.

559-4 Analytical Techniques in Toxicology. This is an advanced class for graduate students interested in the analytical tools used in the field of Environmental Toxicology. Prerequisite: CHEM 340 with C or better.

564-1 to 2 Aquaculture Techniques. (Same as ANS 564) Practical experience in aquaculture techniques. Course consists of modules which require student participation in hands-on experience, (e.g., spawning, induction of spawning, production of fry, operation and grading, diagnosis and treatment of parasites and diseases, and transporting of fish). One credit for completion of two modules. Register any semester, one year to complete elected number of modules. Written report and examination required for each module. Cost incurred by student varies with modules selected. Prerequisite: ZOOL 477 or ANS 477 or consent of instructor.

565-3 Environmental Physiology of Fish. Synthesis of effects of pollutants on physiological processes of fish. Course begins with an overview of fish physiology. Topics include: concepts, methods, and measurements in aquatic toxicology; histopathological, physiological, and behavioral responses to pollutants; and toxicity of heavy metals, organics, particulates and other pollutants. Three lectures per week. Prerequisite: 465 or consent of instructor.

568-2 Fish Stock Assessment. Methods of characterizing fish populations including mortality rates, age growth analysis, population sampling, yield models, habitat evaluation procedures and creel survey techniques. Two one-hour meetings per week. Prerequisite: 466 or consent of instructor.

569-3 Advanced Fisheries Management. Advanced topics related to the management of fisheries including urban fisheries, native American fisheries, freshwater commercial fisheries, Great Lakes fisheries, impact of power generating plants on fishes, and in-depth consideration of indices of community structure and current topics in fish management. Three lectures per week. Prerequisite: 466 or consent of instructor.

570-3 Advanced Aquaculture. (Same as ANS 570) Special topics in aquaculture and practical methods for the production of coldwater, coolwater, warmwater, and tropical aquatic species. Prerequisite: ZOOL 477 or ANS 477 or equivalent with a grade of C or better.

571-3 Fish Reproduction and Breeding. (Same as ANS 571) Principles of finfish reproductive strategies, reproductive

physiology and captive breeding. The role of genetics and the use of biotechnology and various breeding techniques in breeding programs will also be emphasized. The purpose of this course is to develop an understanding of fish reproduction and breeding techniques and to gain an appreciation of the complexity involved in managing a hatchery breeding program. Two lectures a week and one four-hour lab alternate weeks. Prerequisite: ZOOL 477 or ANS 477 or equivalent with a grade of C or better.

573-3 Physiological Ecology. The role of physiological, morphological, and behavioral adaptations and adjustments in the ecology of vertebrate organisms with special emphasis on examining the energy balance and environment as it influences vertebrate ecology. Two hours of lecture and one two-hour laboratory. Prerequisite: BIOL 307 or equivalent. Special approval needed from the instructor.

576-1 Seminar in Ecology. (Same as PLB 589A) Discussions of current and historical research and literature in various subject areas of ecology. 1-12 hours; 1 per semester.

577-2 Population Ecology. Principles of population dynamics as related to animals, with application to management and conservation of animal populations. Areas of emphasis include (a) an introduction to mathematical models and graphical theory of population dynamics, (b) application of theory to population management & Conservation, and (c) empirical approaches to studying population persistence and regulation. Prerequisites: BIOL 307 or consent of instructor.

578-3 Population Genetics. (Same as PLB 578) Genetic structure of populations, factors causing changes and principles governing rate and direction of change. Three lectures per week. Prerequisite: BIOL 304 or equivalent, and BIOL 305 or equivalent.

579-3 Molecular Genetics Techniques. Practical experience in molecular genetics techniques currently used in zoology for population genetic analysis and for molecular systematics. Emphasis will be on methods for allozyme, mtDNA and nuclear DNA analysis. Class projects will focus on experimental design, data collection and analysis. Special approval needed from the instructor.

580-1 Current Topics in Evolution. (Same as ANTH 580, MBMB 580) The Evolution Discussion Group meets weekly throughout the year to discuss current evolutionary literature and the research of participants. All students and faculty with an interest in evolutionary biology are welcomed to participate.

581-2 Zoological Literature. Diversity and functions of zoological literatures, scientific writing and the publication process. Two lectures per week. Restricted to graduate status in a biological science.

582-1 to 4 (1,1,1,1) Graduate Zoology Seminar. Special topics in zoology. Consult department for each semester's topic. One meeting per week. Special approval needed from the instructor and department.

584-3 Conservation Genetics. Application of principles from evolutionary and ecological genetics to conservation biology, fishery management, wildlife management, and aquaculture. Includes an overview of classical, molecular, population and quantitative genetics leading to an understanding of how managers can conserve genetic diversity and evolutionary potential of natural and captive populations. Prerequisite:

BIOL 305 or consent of instructor.

585-36 (3 per topic) Seminar. Advanced study of special topics in zoology. **(a)** Seminar in animal behavior. **(c)** Seminar in ecosystems. **(d)** Seminar in wetland ecology. **(e)** Seminar in wildlife ecology: impact of land use. **(f)** Seminar in fish biology. Survey of fish biology and ecology dealing largely with topics not covered in 465. Life history strategies, physiology and other fundamental biological features of fishes will be covered in some depth. Prerequisite: 465. **(g)** Seminar in parasitology. **(h)** Seminar on the amphibia. **(j)** Seminar in developmental biology. Detailed coverage of current topics of interest in developmental biology; the course will emphasize interacting systems in the development of both vertebrates and invertebrates, from the molecular to the tissue levels. **(z)** Seminar in selected topics.

586-1 Fisheries Seminar. Contemporary topics, literature, and oral and written communication in fisheries science. Enrollment required for zoology graduate students specializing in fisheries science for all fall and spring semesters until degree requirements are completed, unless exempted by the student's academic advisor. Only one 586 credit hour, however, may be used to satisfy degree requirements. One meeting per week.

588-1 to 4 (1, 1, 1, 1) Wildlife Seminar. Contemporary topics, literature, and oral and written communication in wildlife ecology. Enrollment required for zoology graduate students specializing in wildlife ecology for all Fall and Spring semesters until degree requirements are completed. Only four 588 credit hours, however, may be used to satisfy degree requirements. One meeting per week.

589-1 to 2 (1, 1) Zoology Colloquium. Regularly scheduled presentations by invited seminar speakers on topics of current research interest in Zoology. Graded *S/U*. Only two credits of 589 may be used to satisfy degree requirements. Restricted to graduate students in Zoology.

593-1 to 12 Individual Research. Investigation in zoology other than those for theses. Only three hours may be credited toward a degree. Some costs may be borne by the student.

596-1 to 66 (1 to 12 per semester) Research. Graded *S/U* only. Credit may not be used toward a degree in Zoology. Special approval needed from the instructor.

597-1 to 12 Advanced Zoological Techniques. Individualized techniques or experimental procedures to prepare for dissertation research. May be taken at another university. Number of credits determined by committee. Graded on *S/U* basis following final report submitted to major adviser. Restricted to admission to Ph.D. degree program in Zoology. Special approval needed from the major adviser.

598-1 to 6 Research Paper. Research paper for Master of Science degree for Biological Sciences major. Some cost may be borne by the student. Graded *S/U* only. Special approval needed from the instructor.

599-1 to 12 Research and Thesis. Thesis for Master of Science degree. Only six hours may count toward the degree. Some cost may be borne by student. Graded *S/U* only. Special approval needed from the instructor.

600-1 to 32 (1 to 16 per semester) Research and Dissertation. Research and dissertation for Doctor of Philosophy degree. Some cost may be borne by student. Graded *S/U* only. Special approval needed from the instructor.

601-1 per semester Continuing Enrollment. For those graduate

students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

Other Graduate Faculty

Some faculty listed below may not be directly affiliated with a graduate program but have been awarded graduate faculty status to perform certain functions at the graduate level. These individuals are arranged according to their unit affiliation.

The first of the two dates listed with the name of a faculty member indicates the year in which the highest degree was earned; the second date indicates the year when the person first became a faculty member at Southern Illinois University.

COLLEGE OF APPLIED SCIENCES AND ARTS

Beebe, Sandra, Senior Lecturer, Ph.D., Southern Illinois University Carbondale, 2003; 2000. Dental hygiene, elderly access to care and oral health issues.

Bleyer, Dorothy R., Associate Professor, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1977; 1957.

Caldwell, William, Assistant Professor, Ph.D., Southern Illinois University Carbondale, 2001; 2006.

Davis, Diane, Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1990; 1976.

Davis, Joan Mary, Associate Professor, M.S.Ed, Southern Illinois University Carbondale, 1983; 1996. Periodontics, faculty development, tobacco education, occupational health and safety, emergency preparedness, and infection control.

Debeljuk, Luciano, Assistant Professor, M.D., University of Buenos Aires School of Medicine, 1962; 1988. Health care professions.

DeMattei, Ronda, Associate Professor, Ph.D., Southern Illinois University Carbondale, 2006; 1982. Oral issues in children with an autism spectrum disorder and access to oral care for children with special needs.

Evans, Candy, Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1992; 1980.

Gonzenbach, Nancy, Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1990; 1975.

Grace, Linda, Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1985; 1981.

Grey, Michael, Associate Professor, Ph.D., Southern Illinois University Carbondale, 2009; 2004. Magnetic Resonance Imaging/Computed Tomography.

Harrison, Bryan, Assistant Professor, M.S., M.B.A., Southern Illinois University Carbondale, 2007; 2011/ Pilot selection and transition to technology.

Having, Karen M., Associate Professor, M.S., Southern Illinois University Carbondale, 1996; 1998. Diagnostic Medical Ultrasound.

Isberner, Fred R., Professor, Ph.D., *Emeritus*, Southern Illinois University Carbondale, 1984; 1985.

Kaps, Robert, Associate Professor, Ph.D., SIUC, 1996; 1991. Advanced technical studies.

Lautar, Charla, Associate Professor, Ph.D., University of Calgary, Alberta, Canada, 1993; 1995. Ethic and professionalism, access to oral health care and service-learning.

Liu, Echu, Assistant Professor, Ph.D., University of Southern California, 2006; 2006.

Maurizio, Sandra, Associate Professor, Ph.D., Southern Illinois University Carbondale, 2004; 1989. Dental hygiene,

oral and pharyngeal cancers, and access to care for undeserved populations.

NewMyer, David A., Associate Professor, Ph.D., Southern Illinois University Carbondale, 1987; 1977. Aviation management and flight.

Pavel, Samuel R., Assistant Professor, University of Notre Dame du Lac, 2001; 2009.

Pfister, Regina, Assistant Professor, M.S., Southern Illinois University Carbondale, 2002; 2008. Dental hygiene.

Rehwaldt, Susan, Assistant Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1982; 1987.

Rivers, Patrick, Professor, Ph.D., University of Alabama, 1997; 2004. Health care management.

Robertson, Michael, Assistant Professor, M.S, Southern Illinois University Carbondale, 2006; 2007.

Rodriguez, Charles L., Assistant Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1997; 1977.

Rogers, Janet, Associate Professor, Ph.D., Southern Illinois University Carbondale, 1995; 1977. Physical therapy.

Ruiz, Jose R., Associate Professor, Ph.D., Southern Illinois University Carbondale, 2003; 1995. Air traffic control, national airspace system, aviation safety management, aviation career development.

Sarvela, Paul D., Professor and *Vice President*, Ph.D., University of Michigan, 1984; 1986. Strategic planning and needs assessment, program evaluation, community health and epidemiology.

Shaw, Thomas, Associate Professor, Ph.D., Southern Illinois University Carbondale, 2005; 1995. Mortuary science and funeral service.

Sherry, Jennifer, Assistant Professor, M.S., Southern Illinois University Carbondale, 2004; 2000. Clinical dental hygiene, radiology.

Shih, Stephen, Assistant Professor, The Pennsylvania State University, 1992; 2001

Soares, Andrey, Assistant Professor, Ph.D., Pennsylvania State University, 2009; 2009

Soderstrom, Harry, Professor, *Emeritus*, M.S., Bradley University, 1952; 1962.

Stitt, Beverly, Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1980; 1982.

Troutt-Ervin, Eileen, Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1986; 1976.

Vitello, Elaine M., Professor *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1977; 1977.

LIBRARY AFFAIRS

Bauner, Ruth E., Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1978; 1956.

Black, George W., Jr., Professor, *Emeritus*, M.S.L.S., Columbia University, 1966; 1968.

Brown, F. Dale, Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1978; 1970.

Carlson, David H., Professor and *Dean of Library Affairs*, M.L.S., University of Michigan, 1979; 2001

Cox, Shelley M., Associate Professor, *Emeritus*, M.A.L.S., University of Chicago, 1973; 1973.

Fox, James W., Assistant Professor, *Emeritus*, M.L.S.,

University of North Carolina, 1975; 1975.

Harwood, Judith A., Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1981; 1969.

Hostetler, Jerry, Assistant Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1977; 1968.

Kilpatrick, Thomas L., Professor, *Emeritus*, Ph.D., Vanderbilt University, 1982; 1964.

Koch, David V., Associate Professor, *Emeritus*, M.A., Southern Illinois University Carbondale, 1963; 1959.

Logue, Susan, Associate Professor and *Interim Associate Provost for Academic Administration*, M.S.L.I.S., University of Illinois, 1994; 1995.

Matthews, Elizabeth W., Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1972; 1964.

Person, Roland C., Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1982; 1970.

Peterson, Kenneth G., Professor, *Emeritus*, Ph.D., University of California, Berkeley, 1968; 1976.

Russell, Thyra K., Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1987; 1972.

Snyder, Carolyn A., Professor, *Emeritus*, M.L.S., University of Denver, 1965; 1991.

Stubbs, Walter R., Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1983; 1968.

SCHOOL OF MEDICINE CARBONDALE AND SPRINGFIELD CAMPUSES

Chaklos, Mary, Instructor, MEDPREP, Ph.D., Southern Illinois University Carbondale, 1979; 1986.

Chavez, Daniel J., Associate Professor, *Emeritus*, Ph.D., Colorado State University, 1979; 1981.

Clough, Richard W., Associate Professor, Ph.D., University of Nebraska, Medicine, 1983; 1987.

DiLalla, Lisabeth, Associate Professor, Ph.D., University of Virginia, 1987; 1992.

Dorsey, Kevin, Clinical Professor and *Dean and Provost*, Ph.D., University of Wisconsin-Madison, 1968; M.D., Southern Illinois University Springfield, 1978; 1999.

Estavillo, Jaime A., Professor, *Emeritus*, Ph.D., University of California, 1970; 1975.

Evans, Miles S., Associate Professor, M.D., M.S., University of Louisville School of Medicine, 1982; 1990.

Folse, J. Roland, Professor, *Emeritus*, M.D., Johns Hopkins University, 1958; 1971.

Henry, Paul, Associate Professor, Ph.D., Southern Illinois University Carbondale, 1992; 1969.

Jackson, Evelyn W., Associate Professor, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1975; 1977.

Jackson, Robert W., Professor, *Emeritus*, Ph.D., Purdue University, 1963; 1974.

Khardori, Nancy, Professor, M.D. Government Medical College-India, 1972; 1989.

Khardori, Romesh, Professor, M.D. Government Medical College-India, 1972; 1981.

Koschmann, Timothy, Associate Professor, Ph.D., Illinois Institute of Technology, 1987; 1988.

Lacey, Ella, Associate Professor, *Emerita*, Ph.D., Southern Illinois University Carbondale, 1979; 1972.

Metz, Anneke, Instructor, MEDPREP, Ph.D., University of Texas at Austin, 1998;

Paul, Gina, Associate Professor, Ph.D., Southern Illinois University Carbondale, 2001; 2000.

Parr, Earl L., Professor, *Emeritus*, Ph.D., Rockefeller University, 1968; 1981.

Parr, Margaret, Professor, *Emerita*, Ph.D., Columbia University, 1966; 1978.

Roberts, Nicole, Clinical Assistant Professor, Ph.D., University of Illinois at Urbana, 2005; 2008.

Rose, Gregory, Professor, Ph.D., University of California, 1980; 2009.

Shea, Sandra, Associate Professor, Ph.D., Vanderbilt University, 1980; 1988.

Szary, Barbara, Instructor, MEDPREP, Polish Academy of Sciences, 1977; 1983.

Travis, Terry, Professor, *Emeritus*, M.D., Kansas University, 1964; 1972.

Zook, Elvin G., Professor, *Emeritus*, M.D., Indiana University, 1963; 1973

Other Graduate Courses

The 400- and 500-level courses listed below are offered by Southern Illinois University for graduate credit.

AGRICULTURE

Courses (AGRI)

401-3 Fundamentals of Environmental Education. (Same as FOR 401 and REC 401) A survey course designed to help education majors develop an understanding of environmental education principles and teaching both inside and outside the classroom. Requires field trip transportation fee not to exceed \$25 per course registration. Prerequisite: ten hours of biological science or ten hours of recreation and/or education, or consent of instructor.

423-3 Environmental Interpretation. (Same as FOR 423 and REC 423) Principles and techniques of natural and cultural interpretation. Two hours lecture, three hours laboratory. Requires field trip transportation fee not to exceed \$40 per course registration. Prerequisite: ten hours biological science or ten hours of recreation.

450-2 Farming Systems Research and Development. An introduction to farming systems, which is an interdisciplinary approach to agricultural research and development emphasizing small farms. The whole farm is viewed as a system of interdependent components controlled by the farm household. Focuses on analyzing interactions of the-se components as well as the physical, biological and socioeconomic factors not controlled by the household. Techniques of analysis are applicable domestically and internationally.

481-1 International Agricultural Seminar. Discussion of special topics relating to worldwide agricultural development. Special approval needed from the instructor.

595-1 to 6 Instruction in Agricultural Sciences. Acquaints the student with different teaching environments and styles. Students will be expected to participate in instructing agricultural sciences courses. Special approval needed by the instructor.

ARMY MILITARY SCIENCE

Courses (AMS)

402-4 Mission Command and the Company Grade Officer. An exploration of the dynamics of leading in complex situations during Unified Land Operation I, II, and III and the Art of Command and how to communicate effectively with Non-Commissioned Officers (NCO) and soldiers during Taking Charge 1, 2, and 3 and Developing Others (counseling). Cadets will discuss various situations regarding the affects of ethical decisions on personnel and the unit mission. Cadets will be introduced to Comprehensive Soldier Fitness, Being Ready Resilient and the Individual and Family Readiness, which will enable future soldiers and families to manage stress during certain times. The course will focus on preparing cadets for Basic Officer Leader Course (BOLC) and the first unit assignment. Primary focus will be preparing cadets to serve as commissioned officers in the U.S. Army. Includes weekly leadership laboratory.

404-3 U.S. Military History. This course provides a historical

perspective to decisions made by American military leaders; emphasizing solutions to challenges future Army officers might face: battlefield complexity, resource limitations, teamwork deficiencies, etc. The student will learn how former military leaders confronted and coped with similar issues, using their experiences and approaches to arm students with the ability to create their own solutions. Commissioning requirement for Army ROTC cadets. Course not restricted to ROTC cadets.

AVIATION Courses (AVM)

551-3 Aviation Policy, Law, and Regulation. (Same as POLS 551) Examination of the history of American aviation policy, law and regulation. The course focuses primarily on the development, implementation and enforcement of aviation policies and regulations at the federal level. Special attention is paid to the interaction of various government agencies and constituency groups, such as the aircraft industry, airport authorities, airlines, private pilots and passengers. In addition to the historical survey, students will analyze current policy and regulatory trends and identify future problems and opportunities for American aviation policy. Restricted to enrollment in MPAA graduate program or consent of instructor.

552-3 Advanced Airport Administration. (Same as POLS 552) This course will address the role and function of the airport administrator, especially related to the tasks of developing, operating and maintaining various airport services to meet the needs of key airport users. This course will study key airport administration cases at primary, commercial service, reliever and general aviation airports. Meeting key airport regulations concerning operations and security will be a focus of the course. Restricted to enrollment in MPAA graduate program or consent of instructor.

553-3 Advanced Airport Safety Administration. (Same as POLS 553) The Aviation Safety Administrator's job function and responsibility for safety and accident prevention within an aviation, organization is examined using the case study method. The relevant theory, concepts, procedures and techniques of resource allocation, organizational design, decision modeling, task assignment, delegation of authority and responsibility, establishment of organizational goals and priorities and risk management as they relate to Aviation Safety are included. The job functions of an Aircraft Accident Investigation Team and of an Aviation Safety Inspector will be studied. Aviation safety administration literature will be reviewed. Restricted to enrollment in MPAA graduate program or consent of instructor.

554-3 Aviation Planning. (Same as POLS 554) Examination of aviation planning at the international, federal, state and local levels. The course focuses primarily on federal aviation planning, but considerable attention is paid to the interdependent relationship between the various levels of planning. Special attention is paid to the planning process and the role of various agencies and client groups within the aviation community. Restricted to enrollment in MPAA graduate program or consent of instructor.

ENGINEERING TECHNOLOGY

Courses (ET)

There is no graduate program offered through engineering technology. See manufacturing systems for graduate program description. Four-hundred-level courses in this listing may be taken for graduate credit unless otherwise indicated in the course description.

The student is required to purchase photographs and maps for certain courses, and a suitable slide rule is strongly recommended for most courses. Cost is approximately \$10 to \$25.

403A-4 Electronic Circuit Analysis. This course studies fundamental solid-state electronic concepts, the application and design of transistor amplifiers, and operational amplifiers, and the analysis and design of field effect transistor (FET) amplifiers. Course topics include the ideal operational amplifier, diodes, rectifiers, analysis and design of bipolar transistors (BJT) amplifiers, and the analysis and design of field effect transistor (FET) amplifiers. A laboratory emphasizes electronic circuit design and analysis. Prerequisite: ET 304b. Restricted to College of Engineering students or departmental approval required. Restricted to Junior/Senior standing.

403B-4 Electronics Application and Design. This course focuses on system-level design and application of electronics circuits. Circuits include linear integrated circuits, quasi-linear circuits, integrated digital circuits, and pulse wave-form generating and timing circuits. Topics include power amplifiers, Schmitt triggers, comparators, timers and active filters. A design laboratory allows students to implement several design projects with increasing complexity. Prerequisite: ET 403A. Restricted to College of Engineering students or departmental approval required. Restricted to Junior/Senior standing.

437A-4 Telecommunication Systems Fundamentals. This course is a study of the fundamental concepts of analog and digital communication systems in addition to a survey of the state of the art of current and emerging communication technologies. Topics include modulation, signal encoding, transmission media, multiplexing, cellular, bluetooth, Wi-Fi, WIMAX and LTE-Advanced. Associated labs reinforce the concepts introduced and allow students to stimulate and build real systems. (Lecture + Lab). Prerequisite: ET 304B with a minimum grade of C. Restricted to College of Engineering students or departmental approval required. Restricted to Junior/Senior standing.

437B-4 Data and Computer Communication. This course is a study of data and computer networks. Students are introduced to communication protocols, networking technologies and the various computer networks topologies. The OSI (Open Systems Interconnection) model is used as a guide in introducing the purpose and underlying principles of the existing communication protocol standards. This course concludes with an overview of emerging communication standards and technologies. Topics include LAN, WAN, TCP/IP, Routing, and Data Link layer. Associated labs reinforce the concepts introduced and allow students to stimulate and build real systems. Lecture + Lab. Prerequisite: ET 437A with a minimum grade of C. Restricted to College of Engineering students or departmental approval required. Restricted to Junior/Senior standing.

438B-3 Sequential Digital Control and Data Acquisition. Concepts and components used in data acquisition and sequential control systems. The course covers sensors, signal

conditioning, analog-to-digital/digital-to-analog conversion devices, relay logic design and programmable logic controllers. A laboratory demonstrates lecture topics and gives students experience with data acquisition and control languages and ladder logic programming within a design team. Prerequisite: ET 438A, CS 202. Restricted to College of Engineering students or departmental approval required. Restricted to Junior/Senior standing.

439-4 Microcontroller Applications and Design. This course introduces embedded systems design and micro-controller programming. Students study microcontroller architectures and design applications. The course emphasizes interfacing microcontrollers with sensors and actuators. Software tools like Matlab and Simulink aid in visualization and Model-Based Design. A laboratory provides programming/design experience. Prerequisite: ET 238, CS 202. Restricted to College of Engineering students or departmental approval required. Restricted to Junior/Senior standing.

445-3 Computer-Aided Manufacturing. (Same as IMAE 445) Introduction to the use of computers in the manufacturing of products. Includes the study of direct and computer numerical control of machine tools as well as interaction with process planning, inventory control and quality control. Laboratory. Prerequisite: IT 208, Math 111 or Math 108 & 109. Restricted to College of Engineering students or departmental approval required. Restricted to Junior/Senior standing.

455-3 Industrial Robotics. (Same as IT 455) Study of robotics within a wide variety of application areas. Topics covered include classification of robots, sensor technology, machine vision; control systems, including programmable logic controllers (PLCs); robot safety and maintenance; and economic justification of robotic systems. Prerequisite: Math 111 or Math 108 & 109. Restricted to College of Engineering students or departmental approval required. Restricted to Junior/Senior standing.

FASHION DESIGN AND MERCHANDISING

Courses (FDM)

431-3 Ethnic Dress. The study of ethnic dress in non-western cultures, with attention to aesthetics, symbolism and uses of ethnic dress. Cultures studied may vary with each offering. May be repeated for credit.

432-3 Historic Clothing: Western Cultures. Development of clothing in Western civilization to 1850. Consideration of social, economic, aesthetic factors and technical innovations influencing clothing.

433-3 History of Western Costume, 1860 to Present. Evolution of Western costume from 1860 through the present time. Emphasis on the interrelationship between costume, social, political, economic, and technical changes.

441-3 Fashion Product Analysis. Examines how quality and value of apparel products are visually evaluated by industry and consumers. Prerequisite: FDM 101, 241.

462-3 Fashion Motivation. Psychological motivation for wearing clothing, societal functions of clothing, cultural differences in dress. Prerequisite: FDM 102.

481-3 Contemporary Issues in Fashion. A forum geared toward seniors and graduate students in fashion design and

merchandising that focuses on current issues in the softgoods industry. May re-enroll for a maximum of six credits.

482-3 Fashion Merchandising. Focus on the entire process of fashion merchandising: strategic planning; branding; trend forecasting; consumer research; product development; buying, pricing, and costing; product sourcing or manufacturing; retail operations; and presentation to the consumer. Prerequisite: FDM 381.

490-1 to 4 Readings. Supervised reading for qualified students in the area of Fashion Design and Merchandising.

493-1 to 5 Advanced Occupational Skills. Modern occupational practice in fashion design and merchandising for experienced professionals seeking advanced techniques.

494-1 to 4 Workshop. Current work education issues for teachers, supervisors and administrators.

495-2 to 12 Instructional Internship. Internship in approved education and/or training centers. Intern instructor will increasingly assume responsibilities for preparing, presenting and guiding occupational learning in fashion design and merchandising.

496-2 to 12 Professional Internship. Provides a supervised experience in a professional setting in the fashion industry. Activities must be related to the student's academic program and career objectives. Reports and assignments are required to be completed by the student. Mandatory pass/fail.

497-1 to 6 Practicum. Application of work education skills and knowledge. Cooperative arrangements with corporations and professional agencies to study under specialist. Prerequisite: twenty hours in specialty.

498-1 to 5 Special Problems. Investigation of work education problems in fashion design and merchandising.

Industrial Management and Applied Engineering

There is no graduate degree program offered through industrial management and applied engineering. See Manufacturing Systems for graduate program descriptions.

Courses (IMAE)

405-4 Applied Robotics and Control Lab. Laboratory experiments to familiarize the student with writing robotic programs for performing specific tasks, developing and debugging PLC code, integrating robotic programming and PLC programming in the control of a robotics cell, developing basic programming skills using computer simulation packages; milling and lathing applications of CNC machining. Prerequisite: IMAE 445 or ET 445 and IMAE 455 or concurrent enrollment in both. Restricted to College of Engineering students or departmental approval required. Restricted to Junior/Senior standing.

430-3 Health and Injury Control in a Work Setting. (Same as Health Education 430) Assesses the health and injury control programs present in a work setting. Emphasis given to employee programs in health, wellness and injury control that are effective. Field trips to work sites are included. Restricted to College of Engineering students or departmental approval required.

440-3 Manufacturing Policy. Review of all areas covered by the industrial management and applied engineering program.

Includes problems which simulate existing conditions in industry. Students present their solutions to the class and to the instructor in a formal manner. Restricted to College of Engineering students or departmental approval required.

445-3 Computer-Aided Manufacturing. (Same as Engineering Technology 445) Introduction to the use of computers in the manufacture of products. Includes the study of direct and computer numerical control of machine tools as well as interaction with process planning, inventory control and quality control. Laboratory. Prerequisite: IMAE 208, MATH 108 & 109. Restricted to College of Engineering students or special approval needed from the department. Restricted to Junior/Senior standing.

450-3 Project Management. This course is designed to provide students with an overview of the project management process followed by an in-depth examination of the activities needed to successfully initiate, plan, schedule, and control the time and cost factors of the project. Prerequisite: None. Restricted to College of Engineering students or special approval needed from the department. Restricted to Junior/Senior standing.

455-3 Industrial Robotics. (Same as ET 455) Study of robotics within a wide variety of application areas. Topics covered include classification of robots, sensor technology, machine vision; control systems, including programmable logic controllers (PLCs); robot safety and maintenance; and economic justification of robotic systems. Prerequisite: MATH 111 or MATH 108 & 109. Restricted to College of Engineering students or special approval needed from the department. Restricted to Junior/Senior standing.

465-3 Lean Manufacturing. This course will cover the principles and techniques of lean manufacturing. Major topics covered include lean principles, 5S, value stream mapping, total productive maintenance, manufacturing/office cells, setup reduction/quick changeover, pull system/Kanbans, continuous improvement/Kaizen, lean six sigma, lean simulation, and other modern lean manufacturing techniques and issues. Restricted to College of Engineering students or special approval needed from the department. Restricted to Junior/Senior standing.

470A-3 Six Sigma Green Belt. Study the knowledge areas of Six Sigma Green Belt. Topics include six sigma goals, lean principles, theory of constraints design for six sigma, quality function deployment, failure mode and effects analysis, process management, team dynamics, project management basics, data and process analysis, probability and statistics, measurement system analysis, and process capability. Restricted to College of Engineering students or special approval needed from the department. Restricted to Junior/Senior standing.

470B-3 Six Sigma Green Belt II. The objective of this course is to provide the student with a complete coverage of the statistical and analytical tools used and applied in the "Six Sigma" methodology at the green-belt level. Topics include: discrete probability distributions, continuous probability distributions, statistical process control tools, quality control charts, process capability analysis, gauge and measurement capability studies, cumulative sum control charts and exponentially-weighted moving average control charts. Prerequisite: IMAE 307 or MATH 140, IMAE 470A, Restricted to College of Engineering students or special approval needed from the department. Restricted to Junior/Senior standing.

475-3 Quality Control. Study the principles and techniques of modern quality control practices. Topics include total quality management, fundamentals of statistics, control charts for variables and other quality related issues and techniques. Prerequisite: senior standing. Restricted to College of Engineering students or departmental approval required.

476-3 Supply Chain Design and Strategy. The objective of this course is to introduce the basic principles and techniques of supply chain design and strategy. Major topics covered include supply chain network analysis and design, sourcing materials and services, producing goods and services, supply chain sustainability, strategic challenges and change for supply chains, supply chain relationships, supply chain performance measurement and financial analysis, managing information flow and other modern supply chain management techniques and issues. Prerequisite: IMAE 376 with a minimum grade of C. Restricted to Junior/Senior standing. Restricted to College of Engineering students or departmental approval required. Restricted to Junior/Senior standing.

480-3 Six Sigma Black Belt. The purpose of this course is to provide the student with a comprehensive coverage of the knowledge areas and tools of Six Sigma beyond green-belt training, focusing on descriptive and analytical methods to deal with variability including point and interval estimation, hypothesis testing, and design of experiments. Topics include: confidence intervals, hypothesis testing, regression analysis, analysis of variance, single factor experiments, block design of experiments. Prerequisite: IMAE 307 or equivalent, IMAE 470B. Restricted to College of Engineering students or special approval needed from the department. Restricted to Junior/Senior standing.

485-3 Quality Control II. Study the principles and techniques of modern quality control practices. Topics include fundamentals of probability, control charts for attributes, acceptance sampling systems, reliability and other quality related issues and techniques. Prerequisite: senior standing. Restricted to College of Engineering students or departmental approval required.

490-3 Six Sigma. Six Sigma is a data-driven management system with near-perfect-performance objectives that has been employed by leading corporations. Its name is de-rived from the statistical target of operating with no more than 3.4 defects per one million chances, but its principles can be applied in business of all types to routinely reduce costs and improve productivity. This overview describes what Six Sigma is, and what its techniques and tools are. Prerequisite: 475. Restricted to College of Engineering students or departmental approval required.

MEDICAL EDUCATION PREPARATION

No graduate degree program is offered through medical education preparation. Four-hundred-level courses may be taken for graduate credit only with written permission of the relevant department and the graduate dean.

Courses (MEDP)

400A-1 MEDPREP Seminar-Orientation. Seminar on social, professional, and scientific issues of interest to students planning a career in medicine or dentistry. Required of first-year MEDPREP participants. Restricted to MED-PREP

students. Must be taken in A,B,C sequence. Mandatory Pass/Fail.

400B-1 MEDPREP Seminar-Medical/Dental Seminar I. Seminar on social, professional, and scientific issues of interest to students planning a career in medicine or dentistry. Required of first-year MEDPREP participants. Restricted to MEDPREP students. Must be taken in A,B,C sequence. Mandatory Pass/Fail.

400C-1 MEDPREP Seminar-Medical/Dental Seminar II. Seminar on social, professional, and scientific issues of interest to students planning a career in medicine or dentistry. Required of first-year MEDPREP participants. Restricted to MEDPREP students. Must be taken in A,B,C sequence. Mandatory Pass/Fail.

401A-1 to 3 per topic MEDPREP Skills-Academic Enrichment. Focus on skills critical for academic success in preprofessional and professional training. Required of all students. Restricted to MEDPREP students.

401B-1 to 3 per topic MEDPREP Skills-Prematriculation (P/F only). Focus on skills critical for academic success in preprofessional and professional training. Restricted to MEDPREP students.

401C-1 to 3 per topic MEDPREP Skills-Quantitative Skills (P/F only). Focus on skills critical for academic success in preprofessional and professional training. Restricted to MEDPREP students.

401D-1 to 3 per topic MEDPREP Skills-Problem Solving (P/F only). Focus on skills critical for academic success in preprofessional and professional training. Restricted to MEDPREP students.

401E-1 MEDPREP Skills-Convocation (S/U only). Focus on skills critical for academic success in preprofessional and professional training. Required of all students. Restricted to MEDPREP students.

401F-1 to 3 per topic MEDPREP Critical Reading Skills. Focus on skills critical for academic success in preprofessional and professional training. Restricted to MEDPREP students.

401G-1 to 3 per topic MEDPREP Critical Reading Skills. Focus on skills critical for academic success in preprofessional and professional training. Restricted to MEDPREP students.

401H-1 to 3 per topic MEDPREP Critical Reading Skills. Focus on skills critical for academic success in preprofessional and professional training. Restricted to MEDPREP students.

401I-1 MEDPREP Skills-Career Development Skills (P/F only). Focus on skills critical for academic success in pre-professional and professional training. Required of all students. Restricted to MEDPREP students.

402A-1 to 3 per topic MEDPREP Behavioral and Social Sciences Applications. Content may be supplemental (to concurrent behavioral and social science courses), additional (permitting acceleration), or preparational for the MCAT/DAT. Restricted to MEDPREP students.

402B-1 to 2 per topic MEDPREP Special Problems-Research Seminar. Seminars, workshops, lectures, and field experiences related to preparing the student for medical/dental school and careers in medicine or dentistry. Restricted to MEDPREP students.

402C-1 to 2 per term; up to 12 total MEDPREP Special Problems-Clinical Experience, mandatory P/F. Seminars,

workshops, lectures, and field experiences related to preparing the student for school and careers in medicine/dentistry. Restricted to MEDPREP students.

402D-3 MEDPREP Special Problems-Problem-Based Learning (P/F only). Seminars, workshops, lectures, and field experiences related to preparing the student for medical/dental school and careers in medicine or dentistry. Restricted to MEDPREP students.

402E-1 to 2 per topic MEDPREP Special Problems-Independent Readings. Seminars, workshops, lectures, and field experiences related to preparing the student for medical/dental school and careers in medicine or dentistry. Restricted to MEDPREP students.

402F-1 to 2 per topic MEDPREP Special Problems-Independent Research. Seminars, workshops, lectures, and field experiences related to preparing the student for medical/dental school and careers in medicine or dentistry. Restricted to MEDPREP students.

403A-1 to 3 MEDPREP Biology Applications-Medical Genetics. Content may be supplemental (to concurrent biological science courses), additional (permitting acceleration), or preparational for the MCAT/DAT. Restricted to MEDPREP students.

403B-1 to 3 MEDPREP Medical Pharmacology. Content may be supplemental (to concurrent biological science courses), additional (permitting acceleration), or preparational for the MCAT/DAT. Restricted to MEDPREP students.

403C-1 to 3 MEDPREP Biology Applications-Cardiovascular Physiology. Content may be supplemental (to concurrent biological science courses), additional (permitting acceleration), or preparational for the MCAT/DAT. Restricted to MEDPREP students.

403D-1 to 3 MEDPREP Biology Applications-Embryology. Content may be supplemental (to concurrent biological science courses), additional (permitting acceleration), or preparational for the MCAT/DAT. Restricted to MEDPREP students.

403E-1 to 3 MEDPREP Biology Applications-Medical Immunology. Content may be supplemental (to concurrent biological science courses), additional (permitting acceleration), or preparational for the MCAT/DAT. Restricted to MEDPREP students.

403F-1 to 3 MEDPREP Biology Applications-Hormonal Regulation. Content may be supplemental (to concurrent biological science courses), additional (permitting acceleration), or preparational for the MCAT/DAT. Restricted to MEDPREP students.

403G-1 to 6 MEDPREP Biology Applications-Biology Applications. Content may be supplemental (to concurrent biological science courses), additional (permitting acceleration), or preparational for the MCAT/DAT. Restricted to MEDPREP students.

403H-1 to 6 MEDPREP Biology Applications-Neural Science. Content may be supplemental (to concurrent biological science courses), additional (permitting acceleration), or preparational for the MCAT/DAT. Restricted to MEDPREP students.

403I-1 to 3 MEDPREP Biology Applications-Biology Problem Solving. Content may be supplemental (to concurrent biological science courses), additional (permitting acceleration), or preparational for the MCAT/DAT. Restricted to MEDPREP students.

404A-1 to 3 per topic MEDPREP Chemistry Applications-Inorganic Chemistry Applications. Content may be supplemental (to concurrent preprofessional chemistry courses), additional (permitting acceleration), or preparational for the MCAT/DAT. Restricted to MEDPREP students.

404B-1 to 3 per topic MEDPREP Chemistry Applications-Inorganic Chemistry (For Dental Students). Content may be supplemental (to concurrent preprofessional chemistry courses), additional (permitting acceleration), or preparational for the MCAT/DAT. Restricted to MEDPREP students.

404C-1 to 3 per topic MEDPREP Chemistry Applications-Organic Chemistry Applications. Content may be supplemental (to concurrent preprofessional chemistry courses), additional (permitting acceleration), or preparational for the MCAT/DAT. Restricted to MEDPREP students.

404D-1 to 3 per topic MEDPREP Chemistry Applications-Organic Chemistry for Dental Students. Content may be supplemental (to concurrent preprofessional chemistry courses), additional (permitting acceleration), or preparational for the MCAT/DAT. Restricted to MEDPREP students.

404E-1 to 3 per topic MEDPREP Chemistry Applications-Biochemistry. Content may be supplemental (to concurrent biological science courses), additional (permitting acceleration), or preparational for the MCAT/DAT. Restricted to MEDPREP students enrolled in Master's level program.

404F-1 to 3 per topic MEDPREP Chemistry Applications-Chemistry Problem Solving. Content may be supplemental (to concurrent preprofessional chemistry courses), additional (permitting acceleration), or preparational for the MCAT/DAT. Restricted to MEDPREP students.

405A-1 to 6 per topic MEDPREP Physics Applications. Content may be supplemental (to concurrent preprofessional physics courses), additional (permitting acceleration), or preparational for the MCAT. Restricted to MEDPREP students.

405B-1 to 3 per topic MEDPREP Physics Applications-Physics Problem Solving. Content may be supplemental (to concurrent preprofessional physics courses), additional (permitting acceleration), or preparational for the MCAT. Restricted to MEDPREP students.

503B-1 to 3 Medical Pharmacology. Content may be supplemental (to concurrent biological science courses), additional (permitting acceleration), or preparational for the MCAT/DAT. Restricted to MEDPREP students enrolled in Master's level program.

503E-1 to 3 MEDPREP Medical Immunology. Content may be supplemental (to concurrent biological science courses), additional (permitting acceleration), or preparational for the MCAT/DAT. Restricted to MEDPREP students enrolled in Master's level program.

504E-1 to 3 Biochemistry. Content may be supplemental (to concurrent biological science courses), additional (permitting acceleration), or preparational for the MCAT/DAT. Restricted to MEDPREP students enrolled in Master's level program.

SCIENCE

Courses (SCI)

500-2 Science Information Sources. Methods and procedures to efficiently exploit the scientific literature are discussed. The

two-hour class discussion will be supplemented by practical exercises in library usage. Special approval needed from the instructor.

501-4 (2,2) Research Transmission Electron Microscopy. (a) Theory of design of electron microscope, lenses, vacuum systems, alignment, specimen preparation and darkroom. (b) Practical experience in use of transmission electron microscope and specimen preparation.

502-4 (2,2) Research Scanning Electron Microscopy. (a) Theory of design for scanning electron microscope, lenses, vacuum systems, alignment, specimen preparation for biologists and materials scientists, darkroom. (b) Laboratory practical experience in use of scanning electron microscope and specimen preparation. Laboratory fee \$100.

503A-1 to 3 Science for Elementary School Teachers. In-depth studies of selected basic concepts in general science for teachers of upper-level elementary grades. Topics include cells and simple organisms, characteristics of vertebrates, plate tectonics, solar system, nature of matter and magnetism. Prerequisite: currently teaching in an elementary school.

503B-1 to 3 Science for Elementary School Teachers. In depth studies of selected basic concepts in general science for teachers of upper-level elementary grades. Topics include human biology, characteristics of high plants, Earth's building blocks, the atmosphere, forces and simple machines. Prerequisite: currently teaching in an elementary school.

504-9 (1 to 3 per topic) Selected Topics in Science for Teachers. The course consists of selected basic concepts in general science for practicing teachers. Within a given semester a broad area is selected within either the biological sciences or the physical/earth sciences. Topics currently include: (a) Basic stream ecology; (b) Biological assessment of polluted streams; and, (c) Wetland ecosystems. Other topics may be added as deemed necessary. This course may not be used for graduate credit by College of Science majors. Prerequisite: currently teaching in an elementary school.

Post BS Certificate in MRI

Courses (RAD)

444-3 Central Nervous System Imaging in Magnetic Resonance Imaging. Lecture includes discussion of imaging applications of the central nervous system. Review of related anatomy and common pathologies. Special approval needed from the instructor.

454-3 Body Imaging in Magnetic Resonance Imaging. Lecture includes discussion of imaging applications of the gastrointestinal, genitourinary, hepatobiliary and musculoskeletal systems. Review of related anatomy and common pathologies. Special approval needed from the instructor.

464-3 Cardiovascular Imaging in Magnetic Resonance Imaging. Lecture includes discussion of imaging applications of the heart and coronary arteries. Review of related anatomy and common pathologies. Special approval needed from the instructor.

474-6 Advanced MRI Internship. During this clinical internship, the student will be assigned to a selected clinical education

center for the entire semester. During this semester, while performing routine MRI procedures, the student will perform MRI procedures of the heart, body, and extremities. Special approval needed from the instructor.

484-3 Special Topics in MRI/MRA. Supervised readings of selected topics in MRI. Special approval needed from the instructor.

494-1 - 6 Independent Study in Magnetic Resonance Imaging. The selection and investigation of a topic related to MRI. Special approval needed from the instructor.

