1962

1962-1964 Southern Illinois University Bulletin Carbondale Campus (School of Agriculture)

Southern Illinois University Carbondale

Southern Illinois University

Bulletin

School of Agriculture

CARBONDALE CAMPUS 1962-64

Objectives of Southern Illinois University

TO EXALT BEAUTY

IN GOD,
IN NATURE,
AND IN ART;
TEACHING HOW TO LOVE THE BEST
BUT TO KEEP THE HUMAN TOUCH;

TO ADVANCE LEARNING

IN ALL LINES OF TRUTH
WHEREVER THEY MAY LEAD;
SHOWING HOW TO THINK
RATHER THAN WHAT TO THINK;
ASSISTING THE POWERS
OF THE MIND
IN THEIR SELF-DEVELOPMENT;

TO FORWARD IDEAS AND IDEALS

IN OUR DEMOCRACY,
INSPIRING RESPECT FOR OTHERS
AS FOR OURSELVES,
EVER PROMOTING FREEDOM
WITH RESPONSIBILITY;

TO BECOME A CENTER OF ORDER AND LIGHT

THAT KNOWLEDGE MAY LEAD
TO UNDERSTANDING
AND UNDERSTANDING
TO WISDOM.

School of Agriculture

Announcements for 1962-1964

SOUTHERN ILLINOIS UNIVERSITY BULLETIN
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The following issues of the *Southern Illinois University Bulletin* may be obtained without charge from Central Publications, Southern Illinois University, Carbondale, Illinois.

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School of Communications
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School of Home Economics
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All intending students should have the General Information bulletin (issued once a year), plus the special bulletins of the various educational units in which they are most interested.

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Carbondale, Illinois

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This Bulletin

covers in detail questions concerning the School of Agriculture. It does not cover all questions concerning Southern Illinois University. For complete information about the University the prospective student should refer to the General Information bulletin.

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University Calendar, 1962-1963

1962 SUMMER SESSION

Session Begins	Monday, June 18
Independence Day Holiday	Wednesday, July 4
Final Examinations (8-week Session)	Wednesday–Thursday, August 8–9
Commencement	Friday, August 10
Final Examinations (Summer Quarter)	Thursday–Friday, August 30–31
Quarter Ends	Friday, August 31

1962 FALL QUARTER

New Student Week	Friday–Sunday, September 21–23
Quarter Begins	Monday, September 24
Thanksgiving Recess	Wednesday, 12 noon–Monday, 8 A.M. November 21–26
Final Examinations	Wednesday–Tuesday, December 12–18

1963 WINTER QUARTER

Quarter Begins	Wednesday, January 2
Final Examinations	Wednesday–Tuesday, March 13–19

1963 SPRING QUARTER

Quarter Begins	Wednesday, March 27
Memorial Day Holiday	Thursday, May 30
Final Examinations	Thursday–Wednesday, June 6–12
Commencement (Carbondale)	Thursday, June 13
Commencement (Edwardsville)	Friday, June 14

Summer classes begin on Tuesday, June 19. During the fall, winter, and spring quarters, day classes begin on the second day of the quarter. Evening classes (5:30 P.M. or later) begin on the first day of the quarter.

University Calendar, 1963-1964

1963 SUMMER SESSION

Quarter Begins	Monday, June 17
Independence Day Holiday	Thursday, July 4
Final Examinations (8-week Session)	Wednesday–Thursday, August 7–8
Summer Commencements	Friday, August 9
Final Examinations (Summer Quarter)	Thursday–Friday, August 29–30
Quarter Ends	Friday, August 30

1963 FALL QUARTER

New Student Week	Thursday–Saturday, September 19–21
Quarter Begins	Monday, September 23
Thanksgiving Recess	Wednesday, 12 noon–Monday, 8 A.M. November 20–25
Final Examinations	Wednesday–Tuesday, December 11–17

1964 WINTER QUARTER

Quarter Begins	Thursday, January 2
Final Examinations	Wednesday–Tuesday, March 11–17

1964 SPRING QUARTER

Quarter Begins	Wednesday, March 25
Memorial Day Holiday	Saturday, May 30
Final Examinations	Thursday–Wednesday, June 4–10
Commencement (Edwardsville)	Thursday, June 11
Commencement (Carbondale)	Friday, June 12


AGRICULTURE

The University

Southern Illinois University was established in 1869 as Southern Illinois Normal University. The shortened name became official in 1947 by action of the state legislature.

For some years after its establishment, Southern operated as a two-year normal school. In 1907 it became a four-year, degree-granting institution, though continuing its two-year course until 1936. In 1943 the state legislature changed the institution, which had been in theory exclusively a teacher-training school, into a university, thereby taking official recognition of the great demand in the area for diversified training.

The Graduate School, approved in 1943, at first granted only the Master of Science in Education degree. In 1948 it was authorized to grant also the Master of Arts and Master of Science degrees. In 1952 the Master of Fine Arts degree was added to this list, and in 1955 the Doctor of Philosophy degree was added. The Master of Music and the Master of Music Education degrees were authorized in 1956.

In 1949 the Belleville Residence Center was established and the Alton and East St. Louis residence centers in 1957. In 1958 the Southwestern Illinois Residence Office was created to co-ordinate and direct the University's educational activities in the Madison-St. Clair counties area. As a result of substantial purchases of land by the citizens of the area, a new campus at Edwardsville, co-ordinate with the campus at Carbondale, is now being developed.

LOCATION

Carbondale is located at the intersection of Highways U.S. 51 and Illinois 13 and is served by the Illinois Central Railroad.

The new campus site southwest of Edwardsville is on By-pass 66, but temporarily instruction is carried on at Alton and East St. Louis. The

facilities of the former Shurtleff College have been leased by the University for the operation of the Alton Center. The East St. Louis Center is located in the former East St. Louis high school building on Tenth and Ohio streets.

SESSIONS

The academic year is divided into three quarters. Each quarter is approximately twelve weeks in length.

The fall quarter opens near the middle of September and closes just prior to the Christmas vacation period. The winter quarter begins early in January and ends about the middle of March. The spring quarter begins the latter part of March and ends about the second week in June. Definite dates for each quarter may be found in the University Calendar.

In addition to the three quarters, there is an eight-week summer session which begins immediately following the close of the spring quarter. The summer session consists of a comprehensive program of courses offered by the departments of the University. The University is also offering, on an experimental basis, a number of twelve-week courses beginning with the 1962 summer session. Should the experiment be successful, additional summer courses will be scheduled on a twelve-week basis in succeeding years. In addition to the courses which run for eight and twelve weeks, there are special courses covering shorter periods of time.

REGULATIONS

The University and its various instructional units reserve the right to change the rules regulating admission, instruction, and graduation; to change courses and fees; and to change any other regulation affecting the student body. Such regulations shall go into force whenever the proper authorities so determine, and shall apply both to prospective students and to those who have enrolled in the University.

Each student must assume responsibility for his progress by keeping an up-to-date record of the courses he has taken and by checking periodically with his adviser. Responsibility for errors in program or in interpretation of regulations of the University rests entirely upon the student. Advice is always available on request.

A copy of the regulations governing student life may be obtained from the Student Affairs Office on the campus which the student attends.

School of Agriculture

Agriculture has been a part of the educational program at Southern Illinois University since 1913 when a Department of Agriculture was organized to provide instruction in agricultural courses in the institution's teacher training program. At about the same time the first part of the University's experimental farm, a sixty-acre tract now used for campus purposes, was purchased.

The department continued to be a small teaching unit from the time of its organization until 1946 when additional agriculture faculty members were employed. Growth in staff and facilities has been more rapid since 1950, permitting the addition of more technical courses in agriculture.

In 1953 the Division of Rural Studies was established and on July 1, 1955, the division was redesignated as the School of Agriculture. At the same time the school was authorized to grant the Bachelor of Science in Agriculture degree. The school's four academic departments were established in 1957. The departments of Agricultural Industries, Animal Industries, and Plant Industries were authorized to offer Master of Science degree programs in 1958 and Forestry in 1961.

OBJECTIVES

The objectives of the School of Agriculture are to encourage better use of agricultural land, labor, and capital for the general welfare of the nation and its people; to help industries and service agencies closely related to agriculture; and to support the University's general aim of establishing physical facilities and providing the necessary program for developing and bettering human life, with special emphasis upon Southern Illinois and its people.

To carry out these objectives the School of Agriculture strives to educate by providing high-quality instruction, to carry on research which will have significance to agriculture in the area, and to offer consultation and service to the people of Southern Illinois in all phases of agriculture and its related occupations.

These activities are performed by the four departments in the school: (1) Agricultural Industries, (2) Animal Industries, (3) Forestry, and (4) Plant Industries.

FACILITIES

AGRICULTURE BUILDINGS

A modern Agriculture Building of functional design, occupied in 1957, provides adequate classrooms and well-equipped laboratories for the school's teaching and research activities. It also includes office and laboratory space for the school's staff and the personnel of co-operating agencies.

Greenhouses for agricultural research and teaching purposes and an

The Agriculture Building contains 26 classrooms, 18 teaching and research laboratories, offices, an auditorium-exhibition hall, and adjoining greenhouses.

Well-equipped laboratories in the Agriculture Building are designed for teaching and research in various fields of agriculture.

Agricultural Engineering quonset building also are located adjacent to the main building. Additional laboratory and teaching facilities are located on the various agricultural units used by the school and related co-operating agencies.

AGRICULTURAL UNITS

The School of Agriculture currently is responsible for the operation of approximately 1,800 acres of land adjacent to the campus for purposes of teaching and research in agriculture. This acreage is administered in the following units: (1) the University Farms; (2) the Illinois Horticultural Experiment Station; (3) the Southern Illinois Co-operative Agronomy Research Center; (4) the U.S.D.A. Co-operative Small Fruits Research Station; and (5) the Test Farms.

UNIVERSITY FARMS

The University Farms of the School of Agriculture utilize the major share of the institution's farm land holdings. This area is devoted to teaching, research, and demonstration primarily in the livestock, dairy, poultry, and farm management fields. The fields of soils and soil conservation, horticultural and agronomic crops, and forestry are similarly

served on portions of the University Farms. Facilities include a farm service center for storing and maintaining farm equipment and for dispatching student labor used on the farms, a temporary feed center for preparing and mixing rations for livestock on the University Farms, and a number of teaching-research centers.

The poultry center has been in operation since 1953. Present facilities include a service building for egg and poultry handling and supply storage, seven houses for brooding and raising poultry used in teaching and experimental programs, and a number of portable shelters for use on the poultry range.

The dairy center was activated during the spring of 1957. Facilities include a building which houses a dairy-cattle judging and preparation area, two milking parlors, a milk-handling room, and quarters for student employees; three silos with mechanical feeding equipment; and four pole-type barns—one for hay storage and feeding, one for sheltering the dairy animals, and two for housing calves.

The sheep center was erected during 1957. It includes a masonry-type building which provides feed storage, a sheep judging and animal fitting room, wool-handling facilities, and student workers' quarters; and two metal-covered pole-type barns for sheltering and feeding sheep.

The swine center and the beef-cattle center were constructed in 1958. Each of these teaching and research units includes a masonry-type structure containing animal judging and fitting areas, observation facilities, supply storage, and quarters for student employees; and adjacent buildings for sheltering and feeding animals as well as conducting experimental projects.

Adequate flocks and herds are maintained for teaching and research purposes.

ILLINOIS HORTICULTURAL EXPERIMENT STATION

The establishment of the co-operative Illinois Horticultural Experiment Station at Carbondale was approved December 1, 1949, and was fully activated August 1, 1951, by the University of Illinois and Southern Illinois University. The purpose of the station is to provide facilities for research and demonstration with fruit, vegetable, and ornamental crops.

The station's land area includes a twenty-eight-acre south unit, a fifty-five-acre west unit, and approximately twenty-five acres for vegetable research. The station headquarters, located on the west unit, includes a combination research-laboratory storage building, a machinery shed, a sash-type greenhouse, a plastic greenhouse, and a propagation cellar. A pond of one and one-half acres provides water for spraying and irrigating.

Specific projects undertaken include the testing, breeding, and de-

The Illinois Horticultural Experiment Station, operated jointly with the University of Illinois, provides facilities for research and demonstration with fruit, vegetable, and ornamental crops. Checking the appearance, flavor, firmness, and productiveness of fruit is one phase of its program.

veloping of fruit, vegetable, and ornamental varieties adapted to southern Illinois; studying fundamental problems related to cultural methods and to rootstock-variety combinations; and providing demonstrational areas for students and growers.

SOUTHERN ILLINOIS CO-OPERATIVE AGRONOMY RESEARCH CENTER

A co-operatively operated Agronomy Research Center at Carbondale was approved December 15, 1953, and fully activated October 27, 1954, by the University of Illinois and Southern Illinois University. The purpose of the station is to provide facilities for soils and crops research and demonstrations. The station includes approximately one hundred acres of land at two locations.

Projects are conducted on a co-operative basis by personnel of both

Soils and crops research and demonstrations are major functions of the Southern Illinois Agronomy Research Center at Southern, operated jointly with the University of Illinois.

institutions, or independently by personnel of either institution. Studies are conducted to develop acceptable varieties of field and forage crops, emphasizing their adaptability to Southern Illinois; and to seek answers to fundamental problems in the management of soils and the culture of crops. Demonstrations are developed for observation by students and other interested persons.

U.S.D.A. CO-OPERATIVE SMALL FRUITS RESEARCH STATION

A co-operatively operated Small Fruits Research Station at Carbondale was approved October 6, 1958, and activated in March, 1959, by the United States Department of Agriculture, Agricultural Research Service, Crops Research Division, and Southern Illinois University. The purpose of the station is to provide facilities for research investigations on breeding, production, and disease control of strawberries, blueberries, brambles, and other small fruits.

The station includes fifty acres of suitable land supplemented by an irrigation pond and a station service center with a shop, machine storage, and field laboratory located on immediately adjacent acreage. The pond has a capacity of approximately fifteen million gallons.

Details of the co-operative work are jointly planned and conducted, and the research and investigational work shall be for the benefit of the entire fruit industry in Illinois and elsewhere in the United States.

TEST FARMS

The school operates two farm management or demonstration units, designated as Test Farms. Aimed at being representative of desirable southern Illinois agricultural operations, each of the Test Farms has a different kind or combination of farming enterprises. Each serves as a family farm commercial unit that provides experimental data for farm-management research and teaching.

The activated Test Farms are a dairy farm, deriving income from grade A milk, and a steer-hog farm with the principal farm business being market hogs and steers.

PROGRAMS OF INSTRUCTION

The Bachelor of Science in Agriculture degree may be earned in the School of Agriculture with the following majors: General Agriculture, Agricultural Industries, Animal Industries, Forestry, Plant Industries, Vocational Agricultural Education. Graduates have a wide choice of career opportunities. About 40 per cent of the total employment oppor-

tunities in the United States are in agriculture and agriculturally-related occupations. Approximately 20 per cent of Southern's graduates in agriculture have gone into farming. The remaining 80 per cent have entered other major employment areas such as agricultural business, advanced professional training for research and teaching, agricultural education, and government service. Most forestry graduates have gone into governmental or industrial programs.

Students who are candidates for the Bachelor of Science in Agriculture degree may select the curriculum in general agriculture, which provides preparation for work in the over-all field. Students wishing to specialize may choose an appropriate curriculum in any of the departments, or they may choose one of the pre-professional curricula.

A student with a desire to go into specialized scientific work in agriculture including forestry should place strong emphasis upon basic science courses such as mathematics, chemistry, physics, botany, geology, zoology, and economics. This will permit him to continue without undue delay into graduate preparation for professional services in agricultural science or for teaching at the university level.

Many opportunities in technical leadership, sales, management, and other services in agriculturally-related businesses and industries are available to graduates with agricultural training at the bachelor's degree level. In each of the four departments the student is given ample opportunity to take courses in business, communications, and economics, within the departmental majors in addition to courses in his agricultural specialties.

Training in agricultural education prepares graduates for positions in the dissemination of agricultural information through teaching at all levels; in the Extension Service, and in agricultural industries and government agencies.

The pre-professional programs offered in the School of Agriculture include veterinary science (where emphasis on agriculture is desired), dairy technology, agricultural engineering.

A student attending Southern Illinois University's Edwardsville Campus as a freshman with the intent of later transferring to Carbondale for one of the agricultural professions should follow closely the specific requirements for one of the various majors in agriculture in this bulletin.

A sample freshman sequence of courses is shown below for students indicating a major in the School of Agriculture. This guide to scheduling courses by quarter may be modified to meet individual needs and the requirements of certain majors. Students wishing to pursue a career in agricultural science, vocational agricultural education, forestry, or other special objectives should consult an adviser and the General Studies handbook concerning waiver privileges and other adaptations.

SUGGESTED FIRST YEAR CURRICULUM FOR STUDENTS IN AGRICULTURE

BASIC PLAN I, NO WAIVER

FALL		WINTER		SPRING	
Freshman Convocation	0	Freshman Convocation	0	Freshman Convocation	0
Air Science 100a	0	Air Science 100a	0	Air Science 100a & 110	1
GSA 101 (physics)	3	GSA 102 (chemistry)	3	GSA 103 (chemistry)	3
GSC 100 or 101 (music, art)	3	GSC 102 (philosophy)	3	GSC 103 (literature)	3
GSD 101 (English)	3	GSD 102 (English)	3	GSD 103 (speech)	3
GSD 108 or 114 (math.)	3	GSD 109 or 115 (math.)	3	GSD 110 or 116 (math.)	3
GSE 101 (physical educ.)	1	GSE 102 (phys. educ.)	1	GSE 103 (physical educ.)	1
Agriculture*	3–4	Agriculture*	2–4	Agriculture*	3–4
TOTALS	16–17		15–17		17–18

* One course in agriculture each quarter. Recommended course sequences for the five majors are listed below:

General Agriculture:	Agricultural Industries 114; Animal Industries 105 or 125 or 231; Plant Industries 103
Agricultural Industries:	Agricultural Industries 114; Plant Industries 103; Animal Industries 105 or 231 unless the student has particular interest in poultry
Animal Industries:	Animal Industries 105 or 125 or 231; Agricultural Industries 114; Plant Industries 103
Forestry:	Forestry 104; Agricultural Industries 214; Forestry 221
Plant Industries:	Plant Industries 103; Agricultural Industries 114; Animal Industries 105 or Plant Industries 264

GRADUATE PROGRAMS

Programs of graduate study leading to a Master of Science degree are offered by all four of the departments in the School of Agriculture. For details see the Graduate School bulletin.

STUDENT ORGANIZATIONS

In addition to the opportunity of participating in a wide variety of recreational, religious, social, and special interest organizations at Southern Illinois University, students in the School of Agriculture find the opportunity for expression and growth in a number of voluntary groups sponsored by the school.

Each department has one or more special interest clubs appealing primarily to students in those phases of agriculture emphasized in the respective major fields. The Agricultural Economics Club, a student chapter of the American Farm Economics Association, and the Southern Illi-

nois University Chapter of Future Farmers of America are centered in the Department of Agricultural Industries; the Block and Bridle Club in the Department of Animal Industries; the Forestry Club in the Department of Forestry; and the Plant Industries Club in the Department of Plant Industries. For those with interest in the field of soil and water conservation, a student chapter under the sponsorship of the Egyptian Chapter, Soil Conservation Society of America, has been formed. The various organizations meet periodically for programs serving the educational, social, and recreational interests of the students.

An Agricultural Advisory Student Council co-ordinates activities of all agricultural clubs and represents the students within the School of Agriculture.

The Illinois Beta Chapter of the National Fraternity of Alpha Zeta was installed in the fall of 1960. Members of this agricultural honorary fraternity are elected on the basis of scholastic standing and personal qualities which indicate promise of leadership and professional achievement.

The Little Egypt Agriculture Co-operative was organized in 1962 to promote good fellowship and high scholastic standards. The organization has established residence at 506 South Poplar Street, Carbondale.

COMPLETE DETAILS concerning admission, tuition, fees, housing, degree requirements, and student employment are given in the General Information bulletin. For a free copy write to Central Publications, Southern Illinois University, Carbondale, Illinois.

ADMISSION TO THE SCHOOL

As precollege preparation of high school students for the study of agriculture at Southern Illinois University, the School of Agriculture recommends that the following be included: four units of English; two to four units of mathematics (algebra, geometry, advanced mathematics); two to three units of social studies; and two to three units of science (biology, chemistry, physics). In addition, units in agriculture are desirable.

Inquiries concerning admission to the School of Agriculture should be directed to the University's Admissions Office. Application for admission should be initiated at least thirty days in advance of the desired entrance date. High school seniors should start the admission process during the first semester of their senior year, but their formal admission will not be

considered until after receipt of the high school record showing completion of the seventh semester of high school work.

AGRICULTURAL WORK EXPERIENCE

Students enrolled in the School of Agriculture have opportunities to gain experience in various agricultural fields. Much of the work on the school's research and teaching centers and in agricultural laboratories is done by student labor.

The various departments in the School of Agriculture assist in placing students in summer trainee programs such as in forestry and in the Soil Conservation Service. Internship programs are arranged with various private business firms and governmental agencies.

Students seeking agricultural work experience should make application in person at the School of Agriculture Office or through appropriate departments. For on-campus jobs, students must be approved by the Student Work Office.

These work experience opportunities will also help defray a portion of the student's educational expenses, and, in limited instances, lodging may be obtained at one of the teaching and research centers.

Research grants for graduate students and scholarships and awards for undergraduate students are available to those enrolled in specific programs. These special aids provide excellent work experience and financial assistance for qualified students.

RESEARCH GRANTS

Research grants are assigned to specific research projects and may include equipment, supplies, travel, and student assistance. Grantors are

Abbott Laboratories for swine nutrition
Commercial Solvents for ruminant nutrition
Eli Lilly Company for dairy cattle feeding
Fairfield Engineering and Manufacturing Company for swine management and equipment
Hunter Packing Company for swine buildings and management
Illinois Department of Agriculture for marketing
Illinois Farm Supply for fertilizer, agricultural economics, and swine investigations
National Stockyards Company for swine buildings and management
Phillips Petroleum Company for fertilizer investigations
Proctor and Gamble Company for water conservation investigations
Producers Seed Company for corn investigations
Ranger Equipment Company for swine management
Staley Milling Company for swine management and nutrition.

SCHOLARSHIPS AND AWARDS

Awards and scholarships currently available to agricultural undergraduate students are

Sahara Coal Company awards in forestry consisting of cash grants slightly exceeding tuition and fees
Illinois Farm Supply cash awards
Illinois Poultry Improvement Association award
Prairie Farmer Publishing Company scholarship in agricultural journalism
Production Credit Associations cash awards
Tri-county Electric Co-operative cash awards.

Additional loans, scholarships, and awards from university, state, and other agencies are also available to agricultural students. For details, see the Financial Assistance issue of the *Southern Illinois University Bulletin,* which is available without charge from Central Publications, Southern Illinois University, Carbondale, Illinois.

TUITION AND FEES

At the present time legal residents of Illinois registered for more than eight hours pay a total of $61.50 per quarter. This includes $42.00 tuition, a $5.00 book rental fee, a $5.00 student union building fund fee, and a $9.50 student activity fee. Out-of-state students pay an additional $50.00 tuition, or a total of $111.50. Students registered for eight hours or fewer pay one-half tuition, one-half book rental fee, and full student union building fund fee; they have the option of paying the student activity fee.

ADVISEMENT

In order to insure that an undergraduate student is properly advised concerning the course of study which will fulfill the general university requirements and prepare him for his chosen career, academic advisement has been made the special responsibility of a selected group from the teaching faculty. The School of Agriculture has a chief academic adviser and a number of assistant advisers.

In addition to the contacts through the University's General Studies advisers, each student indicating a major in the School of Agriculture may seek secondary advice from an agriculture faculty counselor concerning courses in his major and selection of electives and to confer on other academic and vocational matters.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

Every bachelor's degree candidate is expected to meet the University's general requirements and to follow the recommendations of the academic unit in which he intends to do his major work. The general requirements have been undergoing intensive study with a view to giving the students further options and providing them with a more effective background not only for their professional careers but also for their standing as citizens in the communities to which they go after graduation. This study has resulted in the initiation of a new General Studies program. During the period of transition from the old program to the new, students who have begun their work in the old program will continue in it. The old requirements are summarized in the 1960–62 School of Agriculture bulletin. The new are outlined below.

Each candidate for the degree must complete a minimum of 192 hours of credit in approved courses. At least 64 must be in senior college courses, of which 48 must be earned at Southern, 16 of which may be earned in extension from Southern. Each student must have a *C* average, and grades not lower than *C* in subjects aggregating at least three-fourths of the work. A *C* average is required in the major subject. These averages are required for the credit made at Southern as well as for the total record.

The *quarter hour* is the unit of credit used at Southern and throughout this bulletin. One quarter hour is two-thirds of a semester hour.

OUTLINE OF GENERAL STUDIES REQUIREMENTS

Area A: Man's Physical Environment and Biological Inheritance....24 hours

A first-level basic sequence	9 hours
A second-level continuation sequence	9 hours
Third-level advanced courses	6 hours

Area B: Man's Social Inheritance and Social Responsibilities.....24 hours

A first-level basic sequence	9 hours
A second-level continuation sequence	9 hours
Third-level advanced courses	6 hours

Area C: Man's Insights and Appreciations .....24 hours

A first-level basic sequence	9 hours
A second-level continuation sequence	9 hours
Third-level advanced courses	6 hours

Area D: Organization and Communication of Ideas ..... *18 hours*

Required college composition and speech	9 hours
Either a foreign language or a basic mathematics sequence	9 hours

Area E: Health and Physical Development ..... *6 hours*

First-level required physical education	3 hours
Second-level required health education	3 hours

For details of the General Studies program, consult the General Information issue of the *Southern Illinois University Bulletin.*

WAIVERS

Each student is entitled to waive (i.e. omit entirely) the first-level sequence in the area in which he will concentrate his work and to begin his work in that area at the second level. This is inadvisable, however, for some majors. In the School of Agriculture, the following waivers are possible: Area A for majors in animal industries, general agriculture, plant industries, or forestry; Area B for majors in agricultural industries, vocational agricultural education, or general agriculture. Academic advisers are prepared to guide the student in his exercise of the waiver privilege. A student who has not chosen a field of concentration cannot waive a first-level sequence.

SCHOOL OF AGRICULTURE REQUIREMENTS

In addition to the above, each candidate must fulfill the minimum requirements listed in general agriculture or in one of the departmental majors listed in the next chapter of this bulletin. Every student in the School of Agriculture must take at least one course in each of three of the school's four departments.

Several courses in the School of Agriculture involve field laboratory trips to nearby markets, processing plants, and farms. Individual student expenses are borne by the student with transportation costs prorated among students in each course. Local field trips cost $3 to $5, special trips and field courses as much as $25. An effort has been made to indicate the specific courses involving field trips, but the school reserves the right to require field trips in courses where this fact has not been specifically indicated in the course descriptions.

Instructional Units

GENERAL AGRICULTURE

The curriculum in general agriculture, leading to the Bachelor of Science in Agriculture degree, is intended for students seeking broad backgrounds in the field of agriculture. It is probably the best agricultural curriculum for students who have not chosen their vocations, because it provides for maximum selection of courses within all departments of the School of Agriculture and within other departments of the University.

Whether in making silage, haying, or some other farming activity on the School of Agriculture's experimental farms, opportunities are provided for students to prepare for farming; for opportunities in farm equipment production, maintenance, and sales; and for work in related fields.

Students following this curriculum gain basic preparation for many of the agricultural careers: general farming, agricultural services, agricultural extension, agricultural communications, agricultural business, agricultural industry, and agricultural and biological science. Students who initially enroll in general agriculture may transfer to other agricultural curricula, or they may continue in general agriculture and select courses from various fields.

MINIMUM REQUIREMENTS FOR GENERAL AGRICULTURE

General Studies Requirements (See page 14.)		96
Under certain conditions it is possible to waive either GSA-1 or GSB-1. This is not advisable for students who expect to transfer to other curricula in agriculture.		
Air Science Requirement (See the General Information bulletin.)		3
Agricultural Requirements for the Major in General Agriculture		60
Agricultural Industries 114 or 350 or 354, and others	12	
Animal Industries 105 or 125 or 231, 315, and others	12	
Plant Industries 264 or 309, 301, and others	12	
Forestry or Agricultural Industries: agricultural engineering (Forestry 104 or 360 is recommended.)	3–5	
Electives in agriculture	20–24	
Related Requirements for the Major		3
A course in chemistry		
Electives		30
Total		192

AGRICULTURAL INDUSTRIES

Professor Herman M. Haag, Ph.D. (Cornell)	1959
Professor W. E. Keepper, Ph.D. (Cornell)	1950
Professor Walter J. Wills, Ph.D. (Illinois), Chairman	1956
Associate Professor Ralph Albert Benton, Ph.D. (Illinois)	1956
Associate Professor William McDaniel Herr, Ph.D. (Cornell) (on leave 1962–64)	1957
Associate Professor John James Paterson, M.Sc. (Saskatchewan)	1957
Assistant Professor David L. Armstrong, Ph.D. (Ohio State)	1962
Assistant Professor Milton Shute, M.S. (Cornell)	1955
Assistant Professor Eugene S. Wood, Ed.D. (Missouri)	1949

Visiting Professor Leland G. Allbaugh, Ph.D. (Harvard)	1961–62
Lecturer Grover C. Burkett, B.S. (Southern Illinois)	1961–62
Lecturer Paul A. Gill, M.S. (Southern Illinois)	1962–63
Lecturer Kimbo A. Thompson, B.S. (Mississippi State)	1961–63

The Department of Agricultural Industries provides instruction, research, demonstration, and consultation in the fields of agricultural economics, agricultural education, and agricultural engineering services. All curricula of this department lead to the Bachelor of Science in Agriculture degree with a major in agricultural industries or in vocational agricultural education.

In agricultural economics, courses are offered in the following fields: farm management, farm credit, agricultural prices, agricultural marketing,

A vocational agriculture student teacher explains welding to two students in an area high school.

agricultural co-operatives, and farm policy. An agricultural business option is available.

In agricultural education, completion of a four-year program leads to certification as a teacher of vocational agriculture. Courses in both the School of Agriculture and the College of Education are included.

Courses are offered in the four fields of agricultural engineering: rural electrification, farm power and machinery, farm structures, and soil and water engineering. A special program is available to train farm machinery specialists for positions requiring managerial ability for dealer services and sales work.

MINIMUM REQUIREMENTS FOR AGRICULTURAL INDUSTRIES

General Studies Requirements (See page 14. Waive GSB–1.) 87

Air Science Requirement (See the General Information bulletin.) 3

Agricultural Requirements for the Major in Agricultural Industries .. 48, 60

Three options are available. Each requires 60 hours in the areas indicated below.

	A	B	C
AGRICULTURAL ECONOMICS ..... OPTION			
AGRICULTURAL ENGINEERING SERVICES ..... OPTION			
AGRICULTURAL BUSINESS ..... OPTION			
Agricultural Industries 114, 350, 354, and others	28	28	
Agricultural Industries 114, 354; 214, 215, 303, 306, 373, and others			37
Animal Industries 105 or 231, 315	8	8	8
Plant Industries 103	4	4	4
Plant Industries 309	0	0	4
Forestry or Plant Industries	4	4	0
Electives in agriculture	16	4	7
TOTAL	60	48 [1]	60

Related Requirements for the Major 15–31

Social Sciences and Business	19		
Social Sciences, Business, and Communications		31	
Business and Related Courses			15

Electives 23–27

Courses to complete a total of 192 hours	23	23	27

Total 192

[1] For an agricultural business option, 48 hours are required in agriculture providing additional courses are taken in business, communications, and social sciences to make a total of 60 hours in these fields.

MINIMUM REQUIREMENTS FOR VOCATIONAL AGRICULTURAL EDUCATION

General Studies Requirements (See page 14. Waive GSB–1.)		87
Air Science Requirement (See the General Information Bulletin.)		3
Agricultural Requirements for the Major in Vocational Agricultural Education		72
Agricultural Industries: agricultural economics courses	12	
Agricultural Industries: agricultural engineering courses	12	
Animal Industries	12	
Plant Industries	12	
Forestry 360 or Plant Industries 264	4	
Electives in technical agriculture	20	
Professional Education Requirements		35
Agricultural Industries 210, 307, 309, 312 [1], 313	20	
Educational Administration and Supervision 331, 335	7	
Guidance 305	4	
Secondary Education 310	4	
Related Requirements for the Major		9
Social Sciences	9	
English 391 or proficiency exam	3 or 0	
Total		206

COURSE DESCRIPTIONS

114–4. INTRODUCTION TO AGRICULTURAL ECONOMICS. Agriculture in local and national economy; distribution; size and organization of the farm business units; policies affecting agriculture.

145–4. BASIC ELECTRICITY. (Same as Industrial Education 145.) Application of electrical theory to the use of simple electrical equipment. Lecture, discussion, and laboratory work to present a broad background in basic electrical theory.

210–2. INTRODUCTION TO AGRICULTURAL EDUCATION. An introduction to the history and philosophy of high school vocational agricultural programs.

214–2. AGRICULTURAL DRAWING. The fundamentals of lettering; use of instruments, orthographic and isometric projections, topographic drawing, and graphic depiction of statistical information.

215–4. INTRODUCTION TO FARM STRUCTURES AND ELECTRIFICATION. An introduction to the basic concepts of structures and electricity as they apply to agriculture. Includes farm structures, soil and water structures, and farm electrification.

[1] A minimum grade-point average of 3.5 is required for admission to student teaching.

303–4. SURVEYING. Elementary surveying; use of tape, compass, level, and transit, with practice in making simple maps. Prerequisite: Mathematics 106.

306A–3. SOIL AND WATER CONSERVATION. (Same as Plant Industries 306A.) The study of the theoretical factors affecting soil erosion and excessive water run-off, including practices of water management and soil conservation. Prerequisite: Plant Industries 103.

306B–2. SOIL AND WATER CONSERVATION (LABORATORY). (Same as Plant Industries 306B.) Practical structural methods of controlling water run-off and soil erosion. Prerequisite: 306A or concurrent enrollment.

307–2. SUMMER PRACTICE IN VOCATIONAL AGRICULTURE. An internship with the vocational agriculture teacher in an approved center for practice in summer activities.

309–5. AGRICULTURAL EDUCATION. Methods of teaching agriculture in secondary schools. Taken concurrently with 312 in a professional quarter. Prerequisites: GSB 202, Guidance 305, Secondary Education 310, Educational Administration and Supervision 331, 48 hours in agriculture.

310–4. GENERAL AGRICULTURE. A survey of the agricultural field as it relates to the art and science of food and fiber production; problems in livestock and poultry production; soil and water management; and field crops, fruit, and vegetable production. Not for majors in agriculture. Can be used for natural science credit in elementary education.

311–3. ADULT EDUCATION IN AGRICULTURE. Nature and scope of adult education in agriculture; methods of effectively working with adult and young farmer groups.

312–8. STUDENT TEACHING IN VOCATIONAL AGRICULTURE. Experience in conducting a complete program in vocational agriculture in an approved center. A student must have at least a 3.5 grade-point average before being admitted to this course. Taken concurrently with 309.

313–3. AGRICULTURAL EDUCATION PRACTICES. A discussion of problems and practices in teaching agriculture in high school. Prerequisite: 312.

350–5. FARM MANAGEMENT. Measuring profits, principles, and practice in organizing and operating the business. Field trips. Prerequisites: GSB 212, junior standing.

351–4. FARM FINANCIAL MANAGEMENT. Farm records and accounts as aids in solving financial problems; obtaining and using credit and insurance, budgeting. Prerequisite: 350 or consent of instructor.

354–4. AGRICULTURAL MARKETING. Marketing outlets for farm products, price determinants, agricultural market efficiency, margins, and costs. Prerequisite: GSB 212.

373–5. FARM POWER AND MACHINERY. A basic course to acquaint the student with the principles, operating adjustments, maintenance, and economical use of common farm power units and field machines. Prerequisite: Mathematics 106 or equivalent.

374–4. FARM ELECTRIFICATION. A study of the more common electrical fundamentals and their application to farmstead needs; factors to consider in the selection and use of specialized electrical equipment and motors. Prerequisite: 215.

375–3. FARM SHOP. Set-up of the farm workshop; selection, care, and use of tools and machinery for farm repair work; equipment construction. Prerequisite: Mathematics 106 or equivalent.

376–4. TRACTOR MAINTENANCE. A study of daily and periodical service needs of tractors and on-farm servicing of functional parts. Prerequisite: 373.

377–4. FARM STRUCTURES. Basic requirements of farm buildings; materials used; elementary principles of design; practical application of these principles. Prerequisite: 215.

378–3. FARM MACHINERY. Elementary mechanics and principles on which farm machines operate. Selection, operation, maintenance, and storage of farm machines. Prerequisite: 373.

381–1 to 2. AGRICULTURAL SEMINAR. (Same as Animal Industries 381, Forestry 381, and Plant Industries 381.) Discussions of problems in agriculture. Limited to senior students.

390–1 to 6. SPECIAL STUDIES IN AGRICULTURAL INDUSTRIES. Assignments involving research and individual problems.

394–3. AGRICULTURAL JOURNALISM. Reporting and writing farm and home news, features; selecting farm photographs.

410–2 to 4. PROBLEMS IN AGRICULTURAL SERVICES. Discussion, assignments, and special workshops on problems related to in-service training programs in the agriculturally related fields. Development of more-effective programs in working with farm people. Prerequisite: graduate student in agricultural services or consent of instructor.

411–3. AGRICULTURAL EXTENSION. A study of the history, organization, objectives, programs, and methods of agricultural extension work. Prerequisite: Journalism 393 and a course in psychology or sociology or consent of instructor.

414–4. AGRICULTURAL PROBLEMS AND POLICIES. Recognition of problems and their origins; attempts to solve them. Prerequisite: GSB 212.

417–4. LAND REFORM AND AGRICULTURAL DEVELOPMENT. Principles and practices in improving agriculture in areas with limited capital and low levels of technology. Special emphasis on developments in Asia, Africa, and South America. Prerequisite: GSB-2 and consent of department.

450–4. ADVANCED FARM MANAGEMENT. Methods of analyzing farm enterprises, comparing farm businesses, allocating farm resources, combinations of enterprises, and production factors. Field trips. Prerequisite: 350.

452–4. AGRICULTURAL PRICES. Fluctuations in the general price level, causes and stabilization policies as they affect agriculture. Price determination including the measurement of supply and demand, elasticity, and the theory of price stabilization as applied to agriculture. Prerequisites: GSB 212 and consent of instructor.

456–3. AGRICULTURAL CO-OPERATIVES—AGRICULTURAL MARKETING I. Development of the agricultural co-operative movements, agricultural co-operative organization, legal requirements, principles and practices of agricultural co-operative associations. Prerequisites: 354, GSB 212, or consent of instructor.

457–4. LIVESTOCK MARKETING—AGRICULTURAL MARKETING II. (Same as Animal Industries 457.) Problems and their solutions in mar-

keting livestock. Field trips to market center to observe operating problems. Prerequisites: 354, GSB 212 or consent of instructor.

458–4. GRADING AND MARKETING OF FIELD CROPS—AGRICULTURAL MARKETING III. (Same as Plant Industries 458.) Grading and marketing factors affecting the quality of grain and hay crops; standards employed in their classification and grading in the commercial market; laboratory practice in grading; economic problems and market operations in marketing field crops. Field trips to commercial grain-grading laboratory and marketing center. Prerequisites: 354, GSB 212, Plant Industries 309, or consent of instructor.

471–4. LAND RESOURCE ECONOMICS. (Same as Forestry 471 and Economics 471.) The use of land as an economic variable in production of goods and services; land markets; group versus individual conflicts; elementary land resources planning techniques. Field trip. Prerequisite: 350 or Forestry 470 or Economics 440.

473–4. MATERIALS HANDLING. A study of different systems for handling materials on farms. Use of air, conveyors, and water to move products. Components of successful systems in storing and using products on the farm. Planning of buildings and equipment to be most effective. Economic problems in establishing various types of materials-handling systems. Field trips. Prerequisite: 350 and 215 or 373.

Courses numbered 500 and above are described in the Graduate School bulletin.

ANIMAL INDUSTRIES

Professor Joseph E. Burnside, Jr., Ph.D. (Wisconsin)	1955
Professor Alex Reed, Ph.D. (Illinois), Chairman	1946
Associate Professor Scott William Hinners, Ph.D. (Illinois)	1951
Associate Professor W. G. Kammlade, Jr., Ph.D. (Illinois)	1954
Associate Professor Howard H. Olson, Ph.D. (Minnesota)	1954
Assistant Professor Billy L. Goodman, Ph.D. (Ohio State)	1958
Instructor Verle Chappell, M.S. (Illinois)	1957

Visiting Professor C. E. Wylie, M.A. (Missouri)	1960–62
Lecturer Marshall G. Clark, M.S. (Illinois), Emeritus (1954)	1947
Lecturer Howard W. Miller, Ph.D. (Kentucky)	1961
Lecturer David A. Wieckert, M.S. (Wisconsin)	1962
Assistant Instructor Howard F. Benson, B.S. (Wisconsin State)	1957
Assistant Instructor Terrance T. Courneya, B.S. (Florida)	1961

Whether it is sheep at the school's sheep center or other kinds of livestock at other centers of the school, quality animals in three or more breeds and modern production and handling equipment provide excellent facilities for teaching and research in animal industries and other related agricultural fields.

The Department of Animal Industries provides instruction, research, demonstration, and consultation in the fields of livestock, dairy, and poultry production, pre-veterinary science, and pre-dairy technology. Courses are offered in all phases of animal production, animal nutrition, and livestock management.

Pre-veterinary students may enroll either in the College of Liberal Arts and Sciences or the School of Agriculture. A pre-veterinary student in agriculture will major in the Department of Animal Industries and should consult with a representative of that department concerning the use of available electives.

The first two years of training as a dairy technologist can be completed by careful selection of approved courses.

The student has opportunity to select courses in other departments in the School of Agriculture or related fields such as business, biology, or physical sciences, thus being able to include in his curriculum the agronomic, agricultural economic, and agricultural engineering phases of agriculture or business as related to animal production.

The curriculum below leads to a Bachelor of Science in Agriculture degree with a major in animal industries.

MINIMUM REQUIREMENTS FOR ANIMAL INDUSTRIES

General Studies Requirements (See page 14.)			96
Students with excellent science backgrounds may waive the 9-hour first-level sequence in Area A and substitute other chemistry.			
Air Science Requirements (See the General Information bulletin.)			3
Agricultural Requirements for the Major in Animal Industries			60
(For an AGRICULTURAL SCIENCE option, required hours are in the second column.)			
Animal Industries 105, 125, 231 (any two)	8	8	
Animal Industries 315, 332, 381–1	9	9	
Animal Industries electives	31	19	
Agricultural Industries 114	4	4	
Plant Industries 103	4	4	
Electives in agriculture	4	4	
Mathematics, physical sciences, and biological sciences	0	12	
Related Requirements for the Major			9
Courses in microbiology and chemistry			
Electives			24
Total			192

COURSE DESCRIPTIONS

105–4. ANIMAL HUSBANDRY. Survey of beef cattle, sheep, and hog industries; laboratory work in judging. Field trip.

125–4. ELEMENTARY POULTRY PRODUCTION. Brooding and rearing of chicks; housing, feeding, disease control, flock selection, management, and marketing of poultry.

231–4. DAIRY HUSBANDRY. Introductory work, including selection, herd improvement, milk secretion, manufacturing of dairy products.

311–3. LIVESTOCK JUDGING. Comparative judging of breeding, feeder, and fat livestock. Field trip. Prerequisite: 105.

312–2. DAIRY CATTLE JUDGING. Comparative judging and selection of dairy cattle. Field trip. Prerequisite: 231.

313–2. POULTRY JUDGING. Judging and selection of poultry for egg production and breeding. Grading of poultry products. The poultry judging team representing Southern Illinois University at the intercollegiate contest at Chicago will be selected from students in this class. Field trip. Prerequisite: 125.

314–2. ADVANCED LIVESTOCK JUDGING. Judging and grading of breeding, feeder, and market livestock. Team members to compete in National Intercollegiate Livestock Judging contests to be selected from this class. Field trips. Prerequisite: 311 or equivalent and consent of instructor.

315–4. FEEDS AND FEEDING. Principles of domestic animal nutrition and feeding. Balancing rations. Prerequisite: 105 and GSA 103 or equivalent.

319–2. HORSES. Types, breeds, selection, use, care, and management of saddle and draft animals. Field trip. Prerequisite: 315 or consent of instructor.

321–4. PROCESSING AND GRADING OF POULTRY PRODUCTS. Skills required in price determination, processing, grading, storage, merchandising, and distribution of poultry products. Prerequisite: 125.

327–4. HATCHERY AND BREEDING FARM MANAGEMENT. Flock selection, testing, sexing, trade rules and regulations, trap-nesting, wing-banding, incubation, disease control, hatchery-producer agreements, records. Prerequisite: 125.

332–4. ANIMAL BREEDING AND GENETICS. The application of the basic principles of genetics and breeding systems to the improvement of farm animals. Prerequisites: 105 or 231; GSA 203 or equivalent.

337–4. ANIMAL HYGIENE. Contagious, infectious, and nutritional diseases and parasites of animals; their prevention and control. Field trip. Prerequisites: 105 and GSA 103 or equivalent.

381–1 to 2. AGRICULTURAL SEMINAR. (Same as Agricultural Industries 381, Forestry 381, and Plant Industries 381.) Discussions of problems in agriculture. Limited to senior students.

390–1 to 6. SPECIAL STUDIES IN ANIMAL INDUSTRIES. Assignments involving research and individual problems. Approval of department chairman required.

415–4. ANIMAL NUTRITION. Physical and chemical properties of nutrients; principles involved in determination of nutritive requirements. Prerequisite: 315.

420–4. COMMERCIAL POULTRY PRODUCTION. Broilers, layers, and turkeys as adapted to poultry speciality farms. Field trips. Prerequisite: 125.

423–3. POULTRY NUTRITION. A study of nutrients, vitamins, chemical and biological analysis as related to production. Ration requirements and formulation, methods and economics of feeding. Prerequisites: 125, 315.

430–4. DAIRY PRODUCTION. Milk production; feeding, breeding; calf raising; records, buildings and equipment; sanitation; and diseases. Field trip. Prerequisites: 231, 315.

431–4. REPRODUCTION AND ARTIFICIAL INSEMINATION OF FARM ANIMALS. The anatomy and physiology of reproduction and the principles of artificial insemination in farm animals. Field trip. Prerequisites: 105 or 231; GSA 203 or equivalent.

432–3. QUANTITATIVE INHERITANCE OF FARM ANIMALS. A review of the principles underlying the influence of mutation, selection, migration, and random drift in animal breeding populations; castination and interpretation of heritabilities and genetic correlations; effects of variances of quantitative traits of farm animals. Prerequisite: 332.

433–3. FEEDING DAIRY CATTLE. Nutrient requirements of dairy cattle. Feeding calves and heifers for commercial growth, and cows for economical milk production. Pasture, hay, and silage utilization in milk production. Field trip. Prerequisites: 231, 315.

457–4. LIVESTOCK MARKETING—AGRICULTURAL MARKETING II. (Same as Agricultural Industries 457). Problems and their solution in marketing livestock. Field trip to market center to observe operating problems. Prerequisites: GSB 212, Agricultural Industries 354, or consent of instructor.

465–5. SWINE PRODUCTION. Breed selection, breeding, feeding, management, and marketing of swine. Field trip. Prerequisites: 105, 315.

480–4. SHEEP PRODUCTION. Breeding, feeding, and management of sheep. Field trip. Prerequisites: 105, 315.

485–4. BEEF PRODUCTION. Breeding, feeding, and management of beef and dual-purpose cattle. Field trip. Prerequisites: 105, 315.

486–4. THE RANGE LIVESTOCK INDUSTRY. A course designed to acquaint advanced animal industries students with range livestock operations; consists of full-time classroom review of beef cattle and sheep production followed by a two- to three-week field trip throughout the range area; cost shared by students. Prerequisites: 480, 485. Alternate summers only.

487–3. COMMERCIAL LIVESTOCK FEEDING. Consideration of principles and problems in fattening beef cattle and sheep for market. Field trip. Prerequisites: 105, 315.

Courses numbered 500 and above are described in the Graduate School bulletin.

FORESTRY

Professor Ronald I. Beazley, Ph.D. (Purdue)	1959
Professor Neil W. Hosley, Ph.D. (Michigan), Chairman	1958
Associate Professor Seymour I. Somberg, D.F. (Duke)	1962
Assistant Professor Ernest A. Kurmes, Ph.D. (Yale)	1961
Instructor Maxwell L. McCormack, M.F. (Duke)	1961

Adjunct Professor Stephen S. Boyce, Ph.D. (North Carolina State)	1957
Adjunct Professor Leon S. Minckler, Ph.D. (State University of New York)	1954
Adjunct Professor Robert W. Merz, M.F. (Minnesota)	1956
Visiting Professor Robert I. Ashman, M.F. (Yale)	1961–62
Visiting Professor James F. Dubuar, M.F. (Michigan)	1962–63

The Department of Forestry provides instruction, research, and consultation in the fields of forest production and utilization. The department's four-year curriculum leads to a Bachelor of Science in Agriculture degree making provisions for basic training of students planning forestry as a professional career.

The forestry student's freshman and sophomore years at Southern Illinois University are devoted primarily to studies of basic sciences, such as mathematics, chemistry, botany, physics, and zoology; and other cultural-foundational courses, such as English, history, and economics. Most of the technical forestry courses are provided in the junior and senior years. One spring quarter of practical field courses also is required. A student during this period lives in the field and pays the living expenses involved.

The Crab Orchard Wildlife Refuge, the Shawnee National Forest, the Union County Tree Nursery and Forest, and the Kaskaskia Experimental Forest comprising several hundred thousand acres of forest land are all in the vicinity of the University. These lands are available for use by the Department of Forestry for teaching and research. Also available for wood utilization teaching and research is a wood products pilot plant located at Southern Acres, near Carbondale. The university forest and Giant City State Park provide additional facilities for teaching and research, especially during the Spring Camp.

In addition, the eighteen research foresters of the U.S. Forest Service's Carbondale Forest Research Center are housed adjacent to the Department of Forestry and help to enrich Southern's forestry program.

MINIMUM REQUIREMENTS FOR FORESTRY

General Studies Requirements (See page 14.)		87
Waiver of first-level sequence in Area A is recommended.		
Air Science Requirement (See the General Information bulletin.)		3
Agricultural Requirements for the Major in Forestry		78
Forestry	60	
Forestry elective (one advanced course)	4	
Plant Industries	4	
Agricultural Industries 214, 303, 471	10	
Related Requirements for the Major		35
Physical and biological sciences		
Electives		1
Total		204

Measuring the diameter of forest trees and identifying species is part of the field experience of forestry students in determining the volume of saw-timber and its economic value.

COURSE DESCRIPTIONS

104–3. INTRODUCTION TO FORESTRY. Designed to acquaint students with the broad field of forestry. Special emphasis is given to forestry as a career. Field trips. For forestry majors or with instructor's consent.

221–3. HARDWOOD DENDROLOGY. Field study, identification, classification, and elementary silvics of hardwood trees. Field trips. Prerequisite: GSA 203.

222–3. SOFTWOOD DENDROLOGY. Field study, identification, classification, and elementary silvics of softwood trees. Field trips. Prerequisite: GSA 203.

230–2. LUMBER GRADING. The study and practice of applying National Hardwood Rules, Southern Pine Rules, and West Coast Rules in grading lumber. Tally methods and grading for special products are also covered. Grading rules, approximately $1.50.

306–3. SILVICAL FIELD STUDIES. The forest as a result of site and biotic factors. Influences of the forest on the site.

320–4. WOOD TECHNOLOGY. Structure, identification, and physical properties of wood. Prerequisite: GSA 203.

330–3. LOGGING AND MILLING. Principles of harvesting and manufacturing forest products. Field trips.

331–2. UTILIZATION STUDIES. Utilization practices in hardwood timber types. Field trips.

340–2. FOREST FIRE CONTROL. The causes and effects of forest fires; factors affecting occurrence, intensity, and spread of fires; beneficial effects of fires. Field trips.

350–2. FOREST RECREATION. Laboratory. Recreational use of forest lands with emphasis on parks and national forests. Administration; interpretation; trends in use and developments. Field trips.

360–4. FARM FORESTRY. The management of farm woodlands; measurement of logs, trees, and stands; planting and harvesting methods; improvement cuttings; uses and marketing of woodland products. Field trips. Not for students maioring in forestry.

361–4. FOREST CONSERVATION. The importance and use of forests, their management and conservation, public forest policy. Not to be taken by students maioring in agriculture. Field trips.

362–3. FIELD MENSURATION. Timber cruising, log scaling, and growth studies. Field trips.

363–4. FOREST MENSURATION. Methods and principles of measuring contents of trees, stands of timber, and rough wood products. Application of yield tables and growth studies. Field trips. Prerequisite: GSA 109 or 115.

364–4. PRINCIPLES OF SILVICULTURE. The influence of site factors on the reproduction, growth, development, and characteristics of forest vegetation; the effect of forest cover on the site. Field trips. Prerequisite: 104, GSA 203.

365–3. PRACTICE OF SILVICULTURE. The theory and practice of applying silvical knowledge in controlling establishment, composition, and growth of forest stands. Field trips. Prerequisite: 364.

366–3. REGIONAL SILVICULTURE. Applied systems of silviculture and commercially important timber species and types in the U.S. Prerequisites: 364, 365.

367–3. FIELD SILVICULTURE. Exercises in planting, weeding, thinning, pruning, and improvement cuttings.

368–3. FOREST MENSURATION II. Background and practical problems in planned sampling procedures for obtaining estimates of forest populations. Prerequisite: 363.

375–4. FOREST MANAGEMENT. Economic and technical principles involved in managing forests. Prerequisites: 364, 365.

381–1 to 2. AGRICULTURAL SEMINAR. (Same as Animal Industries 381, Agricultural Industries 381, and Plant Industries 381.) Discussion of problems in agriculture. Limited to senior students.

390–1 to 6. SPECIAL PROBLEMS IN FORESTRY. Assignments involving research and individual problems in forestry. Prerequisite: consent of instructor.

410–3. FOREST MANAGEMENT FOR WILDLIFE. Interrelations between

Forestry study in the School of Agriculture includes such exacting field work as determining soil temperature and composition in deciding on its suitability for certain species of forest trees.

forest practices and game. Forest protection from mammals and birds. Emphasis is on the treatment of the forest. Prerequisite: Zoology 463 and major in forestry or consent of instructor.

440–4. ECOLOGY OF GRASSES AND GRASSLANDS. (Same as Botany 440.) Structure, analysis, and dynamics of grassland communities; structure and growth of individual species. Field and laboratory work. Prerequisite: Botany 340 or consent of instructor.

464–4. ADVANCED SILVICULTURE. Analysis and measurement of site quality; stand density; growth as related to site factors and competition; factors affecting reproduction; the tree as a variable. Prerequisites: 364, 365.

465–2. FORESTRY FIELD STUDIES. An extended trip to study forest conditions and silviculture in different forest regions of the United States. Cost shared by students. Prerequisites: 330, 363, 364, 365.

470–4. ECONOMICS OF PRODUCTION AND MARKETING IN FORESTRY. Introduction to forestry economics; micro-economics of forestry production and conservation; marketing and pricing of forest products. Prerequisite: GSB 212.

471–4. LAND RESOURCE ECONOMICS. (Same as Agricultural Industries 471 and Economics 471). The use of land as an economic variable in production of goods and services; land markets; group versus individual conflicts; elementary land resources planning techniques. Field trip. Prerequisites: 470 or Agricultural Industries 350 or Economics 440.

475–4. MACRO-ECONOMICS AND PLANNING IN FORESTRY. Study of forestry economy; introduction to public planning in forestry including consumption and production goals. Prerequisite: 470 or consent of instructor.

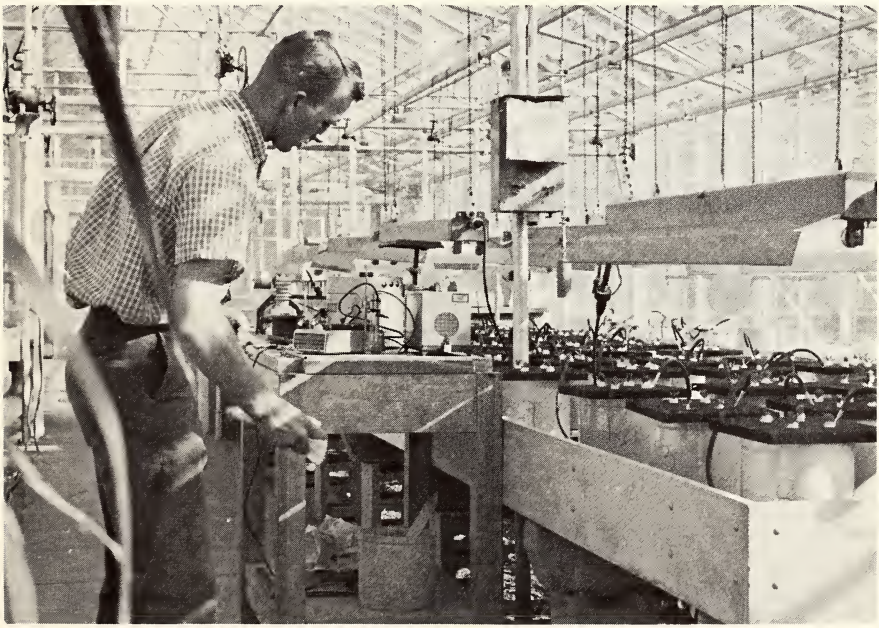
476–3. CASES IN FOREST MANAGEMENT. A series of case studies analyzing governmental, industrial, and private forest management plans and the objectives of forest management by top-level management. Prerequisite: 375.

Courses numbered 500 and above are described in the Graduate School bulletin.

PLANT INDUSTRIES

Professor Alfred Byron Caster, Ph.D. (Arizona), Chairman	1957
Professor James B. Mowry, Ph.D. (Rutgers)	1951
Professor Lloyd V. Sherwood, Ph.D. (Illinois)	1959
Associate Professor Herbert L. Portz, Ph.D. (Illinois)	1954
Associate Professor Lowell R. Tucker, Ph.D. (Massachusetts)	1947
Associate Professor Joseph P. Vavra, Jr., Ph.D. (Purdue)	1951
Assistant Professor Irvin George Hillyer, Ph. D. (Michigan State)	1956
Assistant Professor Maurice L. Horton, Ph.D. (Iowa State)	1962

Adjunct Professor Roland C. Blake, Ph.D. (Minnesota)	1959
Adjunct Professor Robert J. Knight, Jr., Ph.D. (Virginia)	1961–62
Adjunct Professor Ronald H. Meyer, M.S. (Illinois)	1957
Research Associate D. R. Browning, M.A. (Missouri)	1957
Research Associate Charles W. Lobenstein, M.S. (Southern Illinois)	1958



Students and staff members of the Department of Plant Industries use the greenhouses as well as experimental farm areas for class work and research studies in soils and crops, be it crop varieties or a special project in plant nutrition, as shown here.

The Department of Plant Industries provides instruction, research, demonstration, and consultation, both basic and applied, in the areas of production and utilization of fruits, vegetables, grain and forage crops, and ornamentals; and in the field of soils and soil management.

Courses are offered in all phases of intensive and extensive crop production, soil science, soil and water conservation, fertilizers and plant nutrition, weed control, preservation, and related subjects.

The student has ample opportunity to select courses in other departments within the School of Agriculture or related fields outside of Agriculture, such as business, and the biological or physical sciences; this enables him to include in his training not only the *how* but the *why* in crop production and utilization.

MINIMUM REQUIREMENTS FOR PLANT INDUSTRIES

General Studies Requirements (See page 14.)			96
Students with excellent science backgrounds may waive the 9-hour first-level sequence in Area A and substitute other chemistry courses.			
Air Science Requirement (See the General Information bulletin.)			3
Agricultural Requirements for the Major in Plant Industries			60
(For an AGRICULTURAL SCIENCE option, hours required are in the second column.)			
Plant Industries 103, 264, 309, and others	36	36	
Agricultural Industries, Animal Industries, Forestry (work in two departments)	7	7	
Electives in Agriculture	17	5	
Mathematics, physical sciences, and biological sciences	0	12	
Related Requirements for the Major			12
Courses in physical and biological sciences			
Electives			21
Total			192

COURSE DESCRIPTIONS

103–4. INTRODUCTORY STUDY OF SOILS. An introduction to soils and fertilizers, to their role in crop production, and to their management and conservation. Prerequisite: high school chemistry or consent of instructor.

264–4. GENERAL HORTICULTURE. General principles of plant propagation, vegetable growing, fruit growing, landscape gardening, and floriculture. Field trip.

301–4. SOIL SCIENCE. Basic concepts of soil formation, classification, characteristics, fertilization, and management as they apply to the growth of trees. Field trips. Prerequisite: one course in chemistry and a major in forestry.

302–4. ADVANCED SOIL SCIENCE. The application of basic concepts of soil physics, chemistry, and fertility to plant production. Prerequisite: 103 or 301.

304–3. LANDSCAPE GARDENING. Land selection, landscape design and development for home, farm, and public sites with regard to area adaptation. Field trips.

306A–3. SOIL AND WATER CONSERVATION. (Same as Agricultural Industries 306A.) The study of the theoretical factors affecting soil erosion and excessive water run-off, including practices of water management and soil conservation. Prerequisite: Plant Industries 103.

306B–2. SOIL AND WATER CONSERVATION (LABORATORY). (Same as Agricultural Industries 306B.) Practical structural methods of controlling water run-off and soil erosion. Prerequisite: 306A or concurrent enrollment.

309–5. FIELD CROP PRODUCTION. Principles of growth and production of common field crops: cereals, forages, and miscellaneous crops; growth characteristics; adaptation; improvement; culture; diseases and insects and their control; utilization. Field trip. Prerequisite: GSA 202.

315–4. PLANT GENETICS. (Same as Botany 315.) A general course involving principles of evolution and genetics of plants. Prerequisite: GSA 203.

316–4. SMALL FRUITS. Production of strawberries, brambles, grapes, and miscellaneous small fruits. Prerequisite: GSA 203 or consent of instructor.

318–4. WEEDS AND THEIR CONTROL. Losses due to weeds, their 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. Prerequisite: GSA 203.

324–4. ORCHARDING. Commercial tree fruit growing, physiology, orchard practices, pest control, harvesting, and marketing. Field trips. Prerequisites: 264, GSA 203.

334–4. PRESERVATION AND PROCESSING OF AGRICULTURAL PRODUCTS. Commercial canning, freezing, drying, and fermentation of foods. Field trips.

340–4. COMMERCIAL VEGETABLE PRODUCTION. Culture, harvesting, and marketing of commercial vegetables. Field trips. Prerequisites: 264, GSA 203.

344–4. GENERAL FLORICULTURE. Propagation, culture, and uses of flowering plants in the home and garden. Field trips. Prerequisite: GSA 203.

355–5. PLANT PATHOLOGY. (Same as Botany 355.) A study of plant diseases caused by fungi, bacteria, and viruses. Special attention given diseases of Southern Illinois plants. Field trips. Prerequisites: GSA 203, Botany 202, or consent of instructor.

381–1 to 2. AGRICULTURAL SEMINAR. (Same as Agricultural Industries 381, Animal Industries 381, and Forestry 381). Discussion of problems in agriculture. Limited to senior students.

390–1 to 6. SPECIAL STUDIES IN PLANT INDUSTRIES. Assignments in-

volving research and individual problems. Prerequisite: consent of chairman.

401–4. SOIL PHYSICS. Physical properties of the soil; factors affecting them, their measurements, evaluation, and influence in determination of soil productivity. Prerequisite: 103 or 301.

407A–3. FERTILIZERS AND SOIL FERTILITY. The uses of fertilizer materials; effects of various fertilizers on soils and crops; fertility maintenance and soil management. Prerequisite: 301 or 103 and GSA 103.

407B–2. FERTILIZERS AND SOIL FERTILITY. The laboratory study of the chemistry and fertility of soils. This laboratory parallels the theoretical presentation given in 407A. Prerequisite: 407A or concurrent enrollment.

408–4. ADVANCED CROP PRODUCTION. Ecological and physiological considerations used in the interpretation of crop research data, with emphasis on modern developments and trends in production and research of major agronomic crops. Prerequisite: 309.

415–3. PLANT BREEDING. General principles and methods employed in the breeding of horticultural, agronomic, and forest plants. Emphasis on methods of selection, breeding, and testing; use of polyploidy; heterosis; male sterility; combining ability; and plot technique. Prerequisite: 315 or Zoology 401.

419–4. FORAGE CROP MANAGEMENT. Forage production and utilization; forage crop characteristics, breeding, and ecology; grasslands as related to animal production, soil conservation, crop rotation, and land use. Prerequisite: 309.

424A–3. SOIL MICROBIOLOGY. (Same as Microbiology 424A.) A study of the numbers, characteristics, and biochemical activities of soil microorganisms, with particular consideration of their role in the transformations of organic matter, nitrogen, and minerals as related to soil fertility and management. Prerequisite: GSA 203.

424B–2. SOIL MICROBIOLOGY LABORATORY. (Same as Microbiology 424B.) Experiments designed to determine numbers, and to study the characteristics and biochemical activities of the soil microflora as related to fertility. Prerequisites: 424A, or concurrent enrollment, Microbiology.

438–3. ADVANCED VEGETABLE CROPS. Studies of the genetic, morphological, and physiological factors influencing the production of vegetable crops. Prerequisites: 264, Botany 320 or consent of instructor.

440–3. PLANT PROPAGATION. Fundamental principles of asexual and sexual propagation of horticultural plants. Actual work with seeds, cuttings, grafts, and other methods of propagation. Prerequisites: 264, GSA 203, or consent of instructor.

458–4. GRADING AND MARKETING OF FIELD CROPS. (Same as Agricultural Industries 458.) Grading and marketing factors affecting the quality of grain and hay crops; standards employed in their classification and grading in the commercial market; laboratory practice in grading; economic problems and market operations in marketing field crops. Field trips to commercial grain grading laboratory and marketing center. Prerequisites: 309, GSB 212, Agricultural Industries 354 or consent of instructor.

Courses numbered 500 and above are described in the Graduate School bulletin.

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