The College of Agricultural Sciences and Natural Resources traces its history to 1869 when the University was designated as Tennessee's Federal Land-Grant Institution. Under terms of the Federal Land-Grant Act, the University was enabled for the first time to offer instruction in agriculture. This later was expanded to include research for the development of new knowledge and extension for dissemination of such knowledge to rural people.

Two separate administration units—the Agricultural Experiment Station and the Agricultural Extension Service—were organized and assigned responsibility for research and extension functions, respectively. More recently a College of Veterinary Medicine was established. These three units and the College now constitute the University of Tennessee's Institute of Agriculture. Thus, the College of Agricultural Sciences and Natural Resources is not only an academic unit of The University of Tennessee, Knoxville campus, it is also an important administrative unit of the Institute of Agriculture.

There are many shared resources and positive interactions between various units of the Institute. For example, most of the faculty in the College of Agricultural Sciences and Natural Resources hold joint appointments in the Agricultural Experiment Station and they are actively involved in significant basic and applied research in agriculture and the associated natural resources. On campus and field research laboratories are utilized in the instructional programs of the College, while extension and research activities provide many students excellent part-time job opportunities.

The unique association the College has with the UT, Knoxville campus and the other units of the Institute of Agriculture make it possible for the College to offer comprehensive high quality undergraduate and graduate programs.

CURRICULA IN AGRICULTURE

Broad opportunities for individuals to prepare for a future in agriculture, forestry, and wildlife and fisheries science are offered in the College of Agricultural Sciences and Natural Resources. The College provides curricular leading to the degrees of Bachelor of Science in Agriculture, Bachelor of Science in Agricultural Engineering, Bachelor of Science in Forestry, Bachelor of Science in Ornamental Horticulture and Landscape Design and Bachelor of Science in Wildlife and Fisheries Science. The professional degree program in agricultural engineering receives strong support from the College of Engineering and is fully accredited by the Accreditation Board of Engineering and Technology. The forest resource management and forest recreation concentrations are fully accredited by the Society of American Foresters.

A pre-professional curriculum in veterinary medicine is offered in the College. This program is designed to prepare students for admission to the College of Veterinary Medicine located on the Knoxville campus.

Students pursuing programs leading to the degree of Bachelor of Science in Agriculture major in one of several specialized areas of agriculture offered in the college. These major areas are agricultural economics and business, agricultural education, animal science, food technology and science, and plant and soil science. Specific courses required for each of these areas are given under the departmental headings in this section of the catalog. A student must complete the curriculum outlined by the department in which he/she is majoring in order to receive a degree. In all areas of specialization, particular emphasis is placed upon the sciences as a background for agricultural instruction; other courses are included to provide a liberal education. In all subject matter departments there is the opportunity to select elective courses appropriate to the educational objectives of individual students. The choice of electives in each curriculum should be made with the guidance of the faculty advisor.

Students pursuing a program leading to the degree of Bachelor of Science in Forestry may choose concentrations in forest resource management, forest recreation or wood utilization.

All academic and general requirements of the University as stated in the front section of this catalog must be met by agricultural students, and they must complete the requirements in one of the organized curricula. Students transferring into the College of Agricultural Sciences and Natural Resources from other than the UT, Knoxville campus must have a grade point average of 2.0.

The use of transfer credit in technical subject matter areas appropriate to each organized curriculum will be considered and approved by the advisor of that curriculum and the Dean of the College of Agricultural Sciences and Natural Resources. When desirable, validating or proficiency examinations may be requested to determine competence in an area and to avoid unnecessary repetition. Such examinations should be taken during the first semester in residence and must be conducted under the supervision of the head of the department in which the course is offered.

A minimum of 18 semester hours of upper division technical agriculture appropriate to a specified major requirement, and approved by the major advisor, must be completed in residence to fulfill the requirements of baccalaureate degrees offered in the college. A minimum grade point average of 2.0 for all courses taken in the department offering the major/concentration is required.

SATISFACTORY/NO CREDIT COURSES

Students may include a maximum of 21 hours in non-directed electives taken on a satisfactory/no credit basis in the total hours required for graduation.

GRADUATE STUDY IN AGRICULTURE

MASTER OF SCIENCE PROGRAMS

Programs of graduate study leading to the Master of Science degree are offered in all departments in the College of Agriculture.
DOCTORAL PROGRAMS
Graduate study programs lead to the Doctor of Philosophy degree in animal sciences, agricultural economics, agricultural engineering, food technology and science, and plant and soil sciences.

General requirements and policies of the Graduate School of the University of Tennessee relating to admission to the Graduate School, residence, language, research, examination, and admission to candidacy shall apply to these programs and are described in the Graduate Catalog.

FACILITIES
The College of Agricultural Sciences and Natural Resources uses the facilities on the agricultural campus, on University farms located near Knoxville, and on the main University campus. On the agricultural campus are found the main agricultural building, Morgan Hall; the Agricultural Engineering Building; McCord Hall; the Dairy Products Building; McLeod Food Technology Building; C.E. Brash Animal Sciences Building, which includes a large pavilion; Ellington Plant Sciences Building which houses the plant science departments; and greenhouses for teaching and experimental work. The buildings which have been newly provided facilities comparable to the best in the country for the departments which they serve.

Four farms adjacent to or within eight miles of the agricultural campus are used both for instructional and experimental purposes. Morgan Farm (90 acres), Cherokee Farm (350 acres), Plant Sciences Farm (212 acres), and a livestock farm (510 acres) provide excellent field laboratory facilities for instructional programs offered in the College. Cherokee Woodlot (120 acres), the Oak Ridge Forest (2,260 acres), and Ames Plantation (8,000 acres of forested land) provide excellent facilities for field work in forestry, wildlife and fisheries.

Transportation by bus is provided for classes of agricultural students from the agricultural campus to the University farms and to other points of interest where instruction may be given. Transportation by bus is provided between the agricultural campus and the main University campus so that students may make the change between classes without serious inconvenience.

The facilities of the University on the main campus are available to agricultural students. Courses in the basic sciences, business, communications, engineering, etc. are open to agricultural students and are taught on the main University campus.

SELECTION OF CURRICULUM
Agricultural students who have determined their areas of special interest may choose the curriculum most adaptable to their needs when they register as freshmen, and an advisor from the department will be assigned for their counseling. It is not necessary, however, that freshman students select their curriculum until the end of the first year. Those who are in doubt will be assigned a special advisor to assist them in exploring agriculture and to guide them in the planning of appropriate courses of study for the freshman year. When they choose a major department, that department will be assigned from that department.

Students with special interest in science, business, or production technology should consult the advisor about selection of appropriate electives. A foundation for advanced study beyond the baccalaureate degree may be established in any curriculum. If appropriate electives are included; also, courses may be elected in any or all the curricula leading to the degree of Bachelor of Science in Agriculture, in preparation for the Agricultural Extension Service. For this purpose, both the major-curriculum advisor and the agricultural-extension advisor should be consulted.

A very careful choice of electives enables a student with an above average record to complete a double or triple major by satisfying all the requirements of each curriculum. For this purpose, the advisors of each curriculum should be consulted, the dean of the College of Agricultural Sciences and Natural Resources should be informed, and each advisor should maintain a complete record of the student's progress. The multiple major will normally require more than 132 hours credit for graduation.

OPTIONAL MINORS
Agricultural students may have single or multiple minors in agriculture or in other colleges recorded on their transcripts without regard to course overlap among majors and minors. A minor in a department of the College of Agricultural Sciences and Natural Resources requires a minimum of 16 credit hours in courses numbered 200 and above with the majority of credit hours at the 300 and 400 level. At least 9 of the credit hours required for the minor must be completed at UT, Knoxville.

Specific requirements are listed by each department offering a minor. Minors offered in the College of Agricultural Sciences and Natural Resources are open to students of other colleges who have the approval of their advisor and department.

MINIMUM REQUIREMENTS FOR BACCALAUREATE DEGREE PROGRAMS
All B.S. degree programs offered in the College have the following minimum requirements:

- Agriculture and Renewable Natural Resources Perspectives (3)
- Biological Sciences (College of Agriculture courses included) (16)
- Computer Science (3) (Or equivalent experience. See specific departmental requirements)
- English and Communications (including English Composition (6), Speech (3), and Writing or Speaking elective (3) (12)
- English Composition (6)
- Speech (3)
- Writing or Speaking elective (3)
- Mathematics (6)
- Physical Sciences (Chemistry, Physics, Geology) (8)
- Social Sciences and Humanities (including Economics (4) and electives (8) (12)
- Economics (4)
- Electives (8)
- Directed Electives (5)
- Major Courses (24)
- College of Agriculture courses (outside of the major department) designated by the department and/or electives (12)
- Other courses designated by the department and/or electives (38)

For a total of 132 hours.

*Bachelor of Science in Agricultural Engineering
*Must be courses in English and communications, biological sciences, physical sciences, or social sciences and humanities or combinations of these subject matter areas.
*Bachelor of Science in Agricultural Engineering and Bachelor of Science in Forestry program excepted.

INDEPENDENT STUDY
Independent study and special topics courses and seminars offered in each department provide exceptional students the opportunity to explore in greater depth subject matter of unusual significance to agriculture. Students gain experience and are encouraged to assume responsibilities not available in formally organized courses. Association with students and faculty from all phases of agriculture and the renewable natural resources in the study of a common problem provides an unusual challenge.

COURSE LOAD
Students desiring to take more than 19 hours per semester must have the approval of the dean of the college.

TRANSFER STUDENTS
Students who transfer to the College of Agricultural Sciences and Natural Resources from another institution, or from another college at UT, Knoxville, should consult the dean if in doubt about the curriculum they wish to follow and for assignment to an appropriate advisor. Requests for substitutions or special examinations should be submitted for consideration during the first semester of study in the selected curriculum.

AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY

Professors:
- H. Williamson (Head), Ph.D. Missouri; M.B. Badenhop (Emeritus), Ph.D. Purdue; J.R. Brooker, Ph.D. Florida; C.L. Cleland, Ph.D. Wisconsin; D.B. Eastwood, Ph.D. Tufts; L.H. Keller, Ph.D. Kentucky; T.H. Klindt (Asst Dean), Ph.D. Kentucky; F.O. Leuthold, Ph.D. Wisconsin; J.A. Martin (Emeritus), Ph.D. Minnesota; D.L. McLemore, Ph.D. Clemson; B.R. McManus, Ph.D. Purdue; S.D. Mundy, Ph.D. Tennessee; B.H. Pentacost (Asst. Vice Pres.), J.D. Tennessee; D.E. Ray, Ph.D. Iowa State; R.K. Roberts, Ph.D. Iowa State; C.B. Sappington (Emeritus), Ph.D. Illinois; T.J. Whatley (Emeritus), Ph.D. Purdue.

Associate Professors:
- B.C. English, Ph.D. Iowa State; R.H. Orr, Ph.D. Illinois; W.M. Park, Ph.D. Virginia Polytechnic Institute.

Assistant Professors:
- G.C. Davis, Ph.D. North Carolina State; P.M. Jaks, Ph.D. North Carolina State; K.L. Jensen, Ph.D. Oklahoma State; G.K. Pompelli, Ph.D. California (Davis); P.M. Siegel, Ph.D. Virginia Polytechnic Institute.
AGRICULTURAL ECONOMICS AND BUSINESS CURRICULUM

Advisors:
Professors Cleland, Eastwood and McLemore.
Associate Professors Park and Roberts.
Assistant Professors Jensen and Pomollini.

This curriculum is designed to provide students with training in the social sciences as well as in the physical and biological sciences and technical agriculture. Through course selection, students may prepare for employment in the rapidly expanding field of agricultural business or in the field of farm production and related areas. The business oriented student will be prepared for the management of agricultural business. Employment opportunities include work in marketing of agricultural products, agribusiness management, agricultural credit agencies and banks, farm real estate and appraisal services, public and private market analysis, and farm information services utilizing mass communications.

Farm management oriented students will be prepared for positions such as farm managers, county agricultural agents, managers of farm supply and purchasing firms, agricultural journalists, and farm loan agents. The curriculum also provides the necessary background for graduate work in agricultural economics.

Minor consists of 19 credit hours including Economics 201, Agricultural Economics 210, 342, 350, and 6 hours of Agricultural Economics and Rural Sociology electives.

<table>
<thead>
<tr>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
</tr>
<tr>
<td>Agricultural Economics 110</td>
</tr>
<tr>
<td>Agriculture 101</td>
</tr>
<tr>
<td>Biology 110, 120</td>
</tr>
<tr>
<td>Mathematics 121, 122</td>
</tr>
<tr>
<td>English 101, 102</td>
</tr>
<tr>
<td>Economics 201</td>
</tr>
<tr>
<td>¹Nondepartmental social science and humanities</td>
</tr>
<tr>
<td>Sophomore</td>
</tr>
<tr>
<td>Journalism 201</td>
</tr>
<tr>
<td>Computer Science 102</td>
</tr>
<tr>
<td>Agriculture 200</td>
</tr>
<tr>
<td>Agricultural Economics 210</td>
</tr>
<tr>
<td>²Physical Science electives</td>
</tr>
<tr>
<td>Speech 210 or 240</td>
</tr>
<tr>
<td>Accounting 201, 202</td>
</tr>
<tr>
<td>Animal Science 261</td>
</tr>
<tr>
<td>Plant and Soil Science 230</td>
</tr>
<tr>
<td>Junior</td>
</tr>
<tr>
<td>Rural Sociology 380</td>
</tr>
<tr>
<td>Economics 311, 313</td>
</tr>
<tr>
<td>Statistics 201, 202</td>
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<tr>
<td>¹Nondepartmental agriculture electives</td>
</tr>
<tr>
<td>Agricultural Economics 342, 360</td>
</tr>
<tr>
<td>²Nondepartmental social science and humanities</td>
</tr>
<tr>
<td>Senior</td>
</tr>
<tr>
<td>Agricultural Economics 410</td>
</tr>
<tr>
<td>Agricultural Economics or Rural Sociology electives</td>
</tr>
<tr>
<td>Business electives</td>
</tr>
<tr>
<td>Electives</td>
</tr>
</tbody>
</table>

Total: 132 hours

¹See advisor for list of acceptable courses.
²Selected from a list of 100-110 or 120-130, Geology 101-102, Physics 121-122.

AGRICULTURAL AND EXTENSION EDUCATION

Professors:
C.E. Carter, Jr., Ph.D. Ohio State; L.H. Dickson
(Emieritus), Ed.D. Cornell; J.D. Todd, Ed.D. Illinois.

Associate Professors:
R.R. Lessly (Head), Ed.D. Oklahoma State.

Assistant Professor:
R.G. Waters, Ph.D. Penn State.

The Department of Agricultural and Extension Education has two educational areas of emphasis; namely, Agricultural Extension Education and Agricultural Education.

AGRICULTURAL EXTENSION EDUCATION

Although no formal undergraduate curriculum is offered in Agricultural Extension Education, undergraduate courses are available as electives in each formal curriculum. These courses are designed to develop an understanding of the functions, responsibilities, and techniques of the Agricultural Extension Service; and to provide prospective Extension employees with work experience in selected counties.

AGRICULTURAL EDUCATION

Students who complete the requirements for graduation in Agricultural Education receive a Bachelor of Science Degree in Agriculture with a Major in Agricultural Education. The curriculum is designed to prepare persons to assume educational and leadership roles in many phases of the agricultural industry, including agribusiness, schools, agencies, and farming and ranching. Emphasis is on preparing students to teach agricultural education or serve as an educator with the Agricultural Extension Service. Students may choose to concentrate either in the teacher education (certification) option or the professional services option.

The education option is designed to prepare students to meet teacher certification requirements for special education in the field of agricultural education. Teacher Certification is given through the College of Education. Students must file for admission to Teacher Education in the College of Education. (See Admission to Teacher Education in the College of Education.)

Students meeting the requirements for general agricultural education certification may secure endorsements in ornamental horticulture and/or agricultural mechanics by meeting the following requirements:

1. Ornamental horticulture - 12 semester hours of courses in ornamental horticulture and/or landscape design and/or plant and soil science. Subject matter areas must include plant propagation, greenhouse management, growing media, landscape design and nursery management.

2. Agricultural mechanics - 12 semester hours of courses in agricultural mechanization. Subject matter areas must include agricultural power and machinery, soil and water conservation, and agricultural structures.

Students who choose the professional services option may substitute additional technical agriculture and/or internship hours equivalent to the number of hours of student teaching required in the teacher education option. With advisor approval additional hours, required specifically for certification, may also be substituted with courses in the humanities, social sciences or technical agriculture areas. This option provides a broad-based curriculum designed for those students who wish to prepare for careers with the Agricultural Extension Service, agribusiness, government agencies, and farming and ranching. This option does not prepare a student to meet teacher certification requirements.

Hours Credit

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture 101</td>
<td>3</td>
</tr>
<tr>
<td>Biology 110, 120</td>
<td>8</td>
</tr>
<tr>
<td>English 101, 102</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics 110, 121</td>
<td>6</td>
</tr>
<tr>
<td>Economics 201</td>
<td>4</td>
</tr>
<tr>
<td>Animal Science 261 or 281</td>
<td>3-4</td>
</tr>
<tr>
<td>Computer Science elective</td>
<td>3</td>
</tr>
<tr>
<td>Sophomore</td>
<td></td>
</tr>
<tr>
<td>Chemistry 100, 110</td>
<td>8</td>
</tr>
<tr>
<td>Speech 210</td>
<td>3</td>
</tr>
<tr>
<td>Humanities elective</td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Economics 210</td>
<td>3</td>
</tr>
<tr>
<td>Plant and Soil Science 210</td>
<td>4</td>
</tr>
<tr>
<td>Plant and Soil Science 230</td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Engineering Technology 201</td>
<td>3</td>
</tr>
<tr>
<td>Food Technology and Science 360</td>
<td>2</td>
</tr>
<tr>
<td>Physical Education elective</td>
<td>1</td>
</tr>
<tr>
<td>Junior</td>
<td></td>
</tr>
<tr>
<td>Entomology and Plant Pathology 321</td>
<td>1</td>
</tr>
<tr>
<td>Animal Science 331</td>
<td>3</td>
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<tr>
<td>Humanities</td>
<td>3</td>
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<tr>
<td>OHLD 310</td>
<td>3</td>
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<tr>
<td>Agricultural Education 345, 346</td>
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<tr>
<td>Agricultural Economics 342</td>
<td>4</td>
</tr>
<tr>
<td>Educational Psychology 210</td>
<td>3</td>
</tr>
<tr>
<td>*Education 403</td>
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<tr>
<td>*Education 401</td>
<td>2</td>
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<tr>
<td>Health elective</td>
<td>3</td>
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<td>Senior</td>
<td></td>
</tr>
<tr>
<td>Agricultural Education 435, 436</td>
<td>12</td>
</tr>
<tr>
<td>Agricultural Education 420</td>
<td>2</td>
</tr>
<tr>
<td>*Education 403</td>
<td>2</td>
</tr>
<tr>
<td>Agricultural Engineering Technology 452</td>
<td>3</td>
</tr>
<tr>
<td>*Animal Science elective</td>
<td>3</td>
</tr>
<tr>
<td>Humanities electives</td>
<td>2</td>
</tr>
<tr>
<td>General elective</td>
<td>4</td>
</tr>
<tr>
<td>Agricultural electives</td>
<td>5-6</td>
</tr>
</tbody>
</table>

Total: 132 hours

¹The course should contain a writing component.
²Select from Animal Science 481, 482, or 483.
³Equivalent hours may be substituted for students not desiring certification.

AGRICULTURAL ENGINEERING AND TECHNOLOGY

Professors:

Associate Professor:
R.S. Freeland, Ph.D. Tennessee.

Assistant Professors:
D.O. Baxter, M.S. Missouri; R.N. Biswal, Ph.D. Massachusetts, Amherst; W.E. Hart, Ph.D. Purdue, J.B. Wilkerson, Ph.D. Purdue, D.C. Yoder, Ph.D. Purdue, R.E. Yoder, Ph.D. Colorado State, P.E.
Advisors:

The College of Agricultural Sciences and Natural Resources, with the cooperation of the College of Engineering, offers a four-year curriculum leading to the degree of Bachelor of Science in Agricultural Engineering. The curriculum is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. Industry, government agencies, research and testing organizations, and foreign service offer employment opportunities to agricultural engineers.

In addition to general requirements for admission to the University, the minimum requirements for association include two units of algebra, one unit in geometry, one-half unit in trigonometry, and one unit in physics or chemistry. Students may remove deficiencies by registering for special classes during the freshman year.

The curriculum provides instruction in the analytical and design skills needed to solve engineering problems related to agricultural and biological systems. Three concentrations: traditional Agricultural Engineering; Biological Engineering; and Food Engineering are available. A concentration should be selected early in the academic program since there are some differences as early as the freshman year.

Graduates may pursue careers in design, analysis, or development in power and machinery, electrical and electronic systems, processing and materials handling systems, soil and water engineering, waste management, biological and environmental systems, and food engineering.

Each concentration in the curriculum has provisions for elective courses to be taken in the student's area of interest. Students must consult with their advisors each semester regarding the selection of courses and should outline a plan for all such electives before starting the junior year. In the senior year, comprehensive design of systems and their components is emphasized.

Students majoring in agricultural engineering are eligible to participate in the Engineering Cooperative Scholarship program and other student activities in the College of Engineering. Agricultural engineering majors interested in the Cooperative Engineering Scholarship program should consult with the head of the Department of Agricultural Engineering or their faculty advisor.

Agricultural Engineering/College of Agricultural Sciences and Natural Resources

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Engineering Electives</td>
<td>6</td>
</tr>
<tr>
<td>Basic Engineering 201</td>
<td>3</td>
</tr>
<tr>
<td>Electrical Engineering 301</td>
<td>3</td>
</tr>
<tr>
<td>Food Science Elective</td>
<td>3</td>
</tr>
<tr>
<td>Humanities/History/Social Science Elective</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Engineering 405</td>
<td>2</td>
</tr>
<tr>
<td>Mechanical Engineering 331</td>
<td>3</td>
</tr>
<tr>
<td>Technical Elective</td>
<td>3</td>
</tr>
<tr>
<td>Senior</td>
<td>3</td>
</tr>
</tbody>
</table>

Total: 133 hours

or equivalent honors course.

1. If Mathematics ACT is less than 28 or placement test score is unsatisfactory, take Mathematics 130 prior to 141 (see advisor for alternate course schedule). Credit toward graduation will not be granted for Mathematics 130.

2. Select from P&S 210 Introduction to Soil Science, Botany, Microbiology, and other biological science courses as approved by advisor.

3. Must include two courses in Historical Studies and one in Social Sciences, and one in Humanities, Social Science or History. Consult advisor for additional guidelines and a list of approved courses.


Total: 133 hours

Agricultural Engineering

Agricultural Engineering/College of Agricultural Sciences and Natural Resources

AGRICULTURAL ENGINEERING WITH CONCENTRATION IN BIOLOGICAL ENGINEERING

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Hours Credit</th>
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<tbody>
<tr>
<td>Agricultural Engineering 105</td>
<td>2</td>
</tr>
<tr>
<td>Basic Engineering 100, 111, 121</td>
<td>7</td>
</tr>
<tr>
<td>Chemistry 100, 110</td>
<td>11</td>
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<tr>
<td>English 101, 102</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics 141, 142</td>
<td>8</td>
</tr>
<tr>
<td>Sophomore</td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Engineering 101</td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Engineering 200</td>
<td>1</td>
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<tr>
<td>Basic Engineering 101, 131</td>
<td>8</td>
</tr>
<tr>
<td>Biology 110, 120</td>
<td>2</td>
</tr>
<tr>
<td>Engineering Science and Mechanics 231, 321</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics 200, 231, 241</td>
<td>8</td>
</tr>
<tr>
<td>Physics 231</td>
<td>3</td>
</tr>
<tr>
<td>Junior</td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Engineering 303, 451</td>
<td>7</td>
</tr>
<tr>
<td>Basic Engineering 201</td>
<td>3</td>
</tr>
<tr>
<td>Humanities/History/Social Science Elective</td>
<td>3</td>
</tr>
<tr>
<td>Food Science Elective</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry 350</td>
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<tr>
<td>Electrical Engineering 301</td>
<td>3</td>
</tr>
<tr>
<td>Fluid Science Elective</td>
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</tr>
<tr>
<td>Economics 201</td>
<td>2</td>
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<td>Mechanical Engineering 331</td>
<td>3</td>
</tr>
<tr>
<td>Microbiology 210</td>
<td>3</td>
</tr>
<tr>
<td>Senior</td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Engineering 311, 331, 400, 403, 413, 433</td>
<td>16</td>
</tr>
<tr>
<td>Public Speaking and Writing Electives</td>
<td>6</td>
</tr>
<tr>
<td>Design Elective</td>
<td>3</td>
</tr>
<tr>
<td>Total: 133 hours</td>
<td></td>
</tr>
</tbody>
</table>

1. If equivalent honors course.

2. If Mathematics ACT is less than 28 or placement test score is unsatisfactory, take Mathematics 130 prior to 141 (see advisor for alternate course schedule). Credit toward graduation will not be granted for Mathematics 130.

3. Select from P&S 210 Introduction to Soil Science, Botany, Microbiology, and other biological science courses as approved by advisor.

Total: 133 hours

Agricultural Engineering

Agricultural Engineering/College of Agricultural Sciences and Natural Resources
Agricultural Engineering Technology

Advisors:

AGRICULTURAL ENGINEERING

One course in writing (normally technical writing) and Either A.E. related areas. May also include Typically upper division courses in engineering or count the additional hour as technical elective credit. Select from C.E. Conservation; and A.E. 

May include Ag. Engr. design courses from other engineering disciplines as approved by advisor.

Agricultural Engineering Technology


No baccalaureate degree program is offered in agricultural engineering technology; however, seven undergraduate courses are offered to prepare students in other disciplines to apply elementary principles, techniques and systems of engineering to the broad industry of agriculture. A minor in agricultural engineering technology requires a minimum of 18 semester hours as follows: Agricultural Engineering Technology 201, 211, 432, 442 and two of the three courses 422, 452, 462.

A program leading to the Master of Science degree with a major in agricultural engineering technology is available (see the Graduate Catalog). The graduate program is open to qualifying BS graduates from other disciplines who have earned a minor in agricultural engineering technology or who completed courses equivalent to those required for the minor in agricultural engineering technology.

Entomology and Plant Pathology

Professors:

C.J. Southards (Head), Ph.D. North Carolina State; E.C. Bernard, Ph.D. Georgia; R.R. Gerhardt, Ph.D. North Carolina State; J.W. Hilty, Ph.D. Ohio State; P.L. Lambdin, Ph.D. VPI and SU; C.D. Pless, Ph.D. Clemson.

Associate Professors:

J.F. Grant, Ph.D. Clemson; B.B. Reddick, Ph.D. Clemson; M.T. Windham, Ph.D. North Carolina State.

Assistant Professor:


Advisors:

Southards, Gerhardt, Hilty, Lambdin, and Pless.

No undergraduate curriculum exists in the Department of Entomology and Plant Pathology, but a program leading to the Master of Science degree with a major in entomology and plant pathology is available (see Graduate Catalog). Courses in economic entomology, forest protection, plant pathology and veterinary entomology are available to undergraduates.

Instruction and training is provided in those disciplines which deal with the natural hazards that are major causes of losses in agricultural production, namely, insects and plant diseases. Courses of study in entomology or plant pathology should give the student an appreciation of insects and microorganisms, their ecology, population dynamics, potential damage to plants and their products, and various considerations in control alternatives.

ANIMAL SCIENCE

Professors:

K.R. Robbins (Head), Ph.D. Illinois; K.M. Barth, Ph.D. Rutgers; M.C. Bell (Emeritus), Ph.D. Oklahoma State; J.K. Bletner (Emeritus), Ph.D. Ohio State; C.G. Chamberlain (Emeritus), Ph.D. Iowa State; B.H. Erickson, Ph.D. Kansas State; G.O. Hall (Dean, College of Agricultural Sciences and Natural Resources), Ph.D. Iowa State; S.L. Hansard (Emeritus), Ph.D. Florida; E.R. Lidvall (Emeritus), M.S. Tennessee; T.P. McDonald, Ph.D. Tennessee; J.B. McElroy (Emeritus), Ph.D. Auburn; G.M. Merriman (Emeritus), D.V.M. Michigan State; J.K. Miller, Ph.D. Georgia; D.O. Richardson, (Dean, Agr. Exp. Sta.), Ph.D. Ohio State; T.W. Schultz, Ph.D. Tennessee; H.V. Shirley (Emeritus), Ph.D. Illinois; R.R. Shrobe (Emeritus), Ph.D. Iowa State; M.H. Sims, Ph.D. Auburn; R.L. Tugwell (Emeritus), Ph.D. Kansas State.

Associate Professors:


Assistant Professors:


Advisors:

Professors Barth and Erickson. Associate Professors Backus, Bell, Godkin, Hinchcock, Katteh, Masincupp, Oliver, and Walker. Assistant Professors Baas, Quigley, Smalling, and Smith.

The curriculum is designed to prepare students for leadership careers in livestock production and related industries. Courses in husbandry, swine, poultry, sheep, dairy and beef cattle production and management may be elected, providing the opportunity for special or additional training in the dynamic livestock and husbandry technology (production) areas. Through course selection, students may prepare for general or livestock farming, management, business, or science, or elect the pre-veterinary courses preparatory for specialization. Elective selection permits special training for work with feed companies, meat animal, milk, egg, or poultry production, management or marketing groups, agricultural educational agencies, supply and equipment business, agricultural extension services, agricultural communication, public relations, and various organizations associated with agriculture.

A minor in animal science consists of 3 credits from 260 (Animal Industry & Market Evaluation) or 280 (Farm Animal Management Practices); 4 credits from 330 (Animal Nutrition, Feeds, & Ration Formulation); 3 credits from 381 (Animal Production Systems) or one of the 480 series plus 8 credits from the following list: 220, 340, 380, no more than one of the 360 series, 420, 430, 440, the 480 series, and no more than 3 credits from 493.

ANIMAL SCIENCE WITH CONCENTRATION IN PRODUCTION/MANAGEMENT

Freshman

Hours Credit

Agriculture 101

3

Biological Science 108

3

English 101

3

Mathematics 101-122 or 141-142 or 151-152

6-8

Chemistry 100-110 or 120-130

8

Animal Science 101

3

Sociology elective

3

Sophomore

Animal Science 220, 260

6

Plant and Soil Science 210

3

Speech 210 or 240

3

Economics 201

3

Business elective

3

Animal Products Directed Elective Chosen from: FTS 269 or 360, 369 or 390

2-3

Junior

Biological Science Restricted Elective

3

Historical Studies

6

Animal Science 320, 330, 340; one course from 361, 362, 363 or 364; 380

15

Non-Agriculture Agriculture Electives

5-6

Free Elective

3

Senior

Animal Science 430

2

Animal Science 495

1

Animal Science 481 or 482 or 483 or 484

3

Animal Science - one course from the three remaining above or one of 485, 469, 581

Free Electives

7-9

Production Agriculture Electives

6

Business Elective

9

Total: 132 hours

May be chosen from approved list of courses meeting University requirements as Social Sciences.

May be chosen from approved list of courses meeting University requirements as Humanities and described as writing intensive.

May be chosen from approved list of courses meeting University requirements as Humanities.

May be chosen from approved list of courses meeting departmental requirements as business electives.

May be chosen from approved list of courses meeting departmental requirements as biological science restricted electives.

May be chosen from approved list of courses meeting University requirements as History.

May be chosen from approved list of courses meeting departmental requirements as Production Agriculture.
ANIMAL SCIENCE WITH CONCENTRATION IN SCIENCE/TECHNOLOGY

Freshman
* Agriculture 101 ........................................... 3
  110-120 .................................................. 8
  English 101-102 ........................................ 6
  Mathematics 121-122 or 141-142 or 151-152 .... 6-8
  Chemistry 100-110 or 120-130 ....................... 8
  Animal Science 101 ...................................... 1
  Social Science elective ............................... 3

Sophomore
* Animal Science 220, 260 ................................ 6
  Agriculture 200 and 301 (Computer Elective) .... 3
  Speech 210 or 240 .................................... 3
  Writing Elective ....................................... 3
  Economics 201 .......................................... 3
  Physical Science and Math Restricted Elective .... 8
  Biological Science Restricted Elective ............. 3
  Animal Products Directed Elective Chosen from:
  - Economics ..............................................
  - Animal Science ......................................

Junior
* Biological Science Restricted Electives .......... 8
  Physical Science Restricted Electives ............. 6
  History .................................................. 3
  Animal Science 320, 330, 340, 380 ................. 13
  Senior
  * Humanities Elective ................................. 3
  * Biological Science Restricted Elective .......... 3
  Animal Science 455, and one course from 410, 481
  or 483, 484, 485, 486, 489 ........................ 4
  Agricultural Economics Elective .................... 3
  Non-Animal Science Agriculture Electives ......... 3

Free Electives ........................................ 10-12

Total: 132 hours

May be chosen from approved list of courses meeting University requirements as Social Sciences.
* May be chosen from approved list of courses meeting University requirements as Humanities and described as writing intensive.
* May be chosen from approved list of courses meeting departmental requirements as physical science and math restricted electives.
* May be chosen from approved list of courses meeting departmental requirements for biological science restricted electives.
* May be chosen from approved list of courses meeting departmental requirements as History.
* May be chosen from approved list of courses meeting University requirements as Humanities.

Electives allow students to select an area for specialization. Those interested in production/management would select courses in business administration, economics, agricultural economics, finance, and accounting; in science/technology in chemistry, zoology, physics, and statistics, etc. Electives should be chosen with career objectives in mind and in consultation with the advisor. The animal science core courses are 220, 260, 320, 330, 340, and 380.

PRE-VETERINARY MEDICINE PROGRAM

This program allows students to be awarded a B.S. degree in Agriculture with a major in Animal Science, after the successful completion of the first two semesters in the College of Veterinary Medicine (CVM). Students must begin this program early in the pre-veterinary curriculum. The specific requirements are:
1. Completion of all pre-veterinary requirements.
   a. English Comp. 101-102 (3,3) - 6 hours
   b. Humanities and Social Sciences - 18 hours
   c. Calculus A-B, 121-122 or Calculus II, 141-142 or Biocalculus II, 151-152 (3,3) - 6 hours
   d. Elements of Physics 221-222 (4,4) - 8 hours
   e. General Chemistry 120-130 (4,4) - 8 hours
   f. Organic Chemistry 350-360 and Laboratory 369 (3,3,2) - 8 hours
   g. Cellular and Comparative Biochemistry 410 (4) - 4 hours
   h. General Biology 110-120 (4,4) - 8 hours
   i. Genetics 220 (3) - 4 hours
   j. Cell Biology 210 (3) - 4 hours
2. The last 30 hours of the three-year pre-veterinary curriculum must have been taken at UT, Knoxville.
3. At least 12 hours of upper division (300 and 400 level courses) technical agricultural courses must be taken at UT, Knoxville.
4. In addition to all the required pre-veterinary medical courses, the following (or approved equivalents) must be completed before entering the College of Veterinary Medicine.
   a. Animal Science 101 - 1 hour
   b. Agriculture 101 - 3 hours
   c. Animal Science 260 - 3 hours
   d. Animal Science 320 - 3 hours
   e. Animal Science 330 - 3 hours
   f. Animal Science 340 - 3 hours
   g. Animal Science 380 - 3 hours
   h. One course from Animal Science 410, 481, 483, 484, 485, 489, or 489 - 3 hours
   i. Computer Science Elective - 3 hours
   j. Economics 201 - 3 hours
   k. Speech 210 or 240 - 3 hours
   l. One course from Animal Science 481, 483, 484, 485, 489, or 489 - 3 hours
   m. Computer Science Elective - 3 hours
   n. Economics 201 - 3 hours
   o. Laboratory 369 (3,3,2) - 8 hours
   p. General Biology 110-120 (4,4) - 8 hours
   q. Genetics 220 (3) - 4 hours
   r. Cell Biology 210 (3) - 4 hours
5. Satisfactory completion of the first two semesters in the CVM professional program.
6. No later than December 31 of the student's fourth year in the CVM (s)he should contact the Animal Science Department in order to check on graduation procedures for this program.
7. A total of 132 hours must be completed by the end of the first year in the CVM.

FOOD TECHNOLOGY AND SCIENCE

Professors:

Associate Professors:
G.L. Christen, Ph.D. Missouri; H.D. Loveday, Ph.D. Kansas State; J.R. Mount, Ph.D. Ohio State; M.J. Riemann, Ph.D. Kansas State.

Assistant Professors:
R.N. Biswal, University of Massachusetts, Amhurst.

Advisors:
Collins, Draughon, Jaynes, Loveday, Melton, Mount, Penfield, and Riemann.

The major in food technology and science prepares students to apply the sciences and engineering technology to manufacture, preserve, store, and distribute foods that meet the needs and desires of consumers. Coursework emphasizes the basic principles of converting raw food materials into acceptable consumer products. Selected commodity courses detail processing of specific types of food materials. Students entering the program must have an interest in the sciences, particularly chemistry, microbiology, and biology.

This curriculum is designed to prepare students for professional careers in positions in the food industry such as food microbiologist, food chemist, quality evaluation and control supervisor, plant management, ingredients specialist, etc. The program of coursework conforms to the guidelines of the model Curriculum of the Institute of Food Technologists. A special problems course provides opportunity for practical training in food processing plants and laboratories or federal and state laboratories.

The minor in Food Technology and Science requires a minimum of 16 hours as follows: 140, 420-429, 410 or 411, 440, and one elective course in Food Technology and Science.

Food Technology and Science 140 ........................................ 3
Three commodity electives are required, one each in Sociology, Economics, Political Sciences, Religious Psychology, Anthropology, Human Services, departments: a. Art, Music, Theatre, Classics; b. Mathematics

Food Technology and Sciences Electives
Food Technology and Science
Food Technology and Science
Senior
Nutrition and Food Science 300
Nutrition and Food Science 301
Nutrition and Food Science 316
Nutrition and Food Science 410

Social Sciences and Humanities Electives

Core (Emeritus), Ph.D. Syracuse; R.W. Buckner, Ph.D. North Carolina State; H.A. Dimmick, Ph.D. Colorado State; R.L. Little, Ph.D. North Carolina State; D.M. Ostermeier, Ph.D. Wyoming; R.L. Little, Ph.D.

Forestry and Wildlife and Fisheries

The Forest Recreation Concentration provides opportunities to obtain an education in preparation for professional positions in the planning, development, interpretation, and management of private and public forested lands for recreational purposes. Students also learn the basic philosophy and principles associated with leisure time and its use along with the relationship of forest resources to the constructive use of leisure time.

Forestry major leads to the degree Bachelor of Science in Forestry and the major in wildlife and fisheries science leads to the degree Bachelor of Science in Wildlife and Fisheries.

The University has over 21,000 acres of forest land available for teaching, research, and demonstration. The Tennessee Valley Authority, Great Smoky Mountains National Park, and Cherokee National Forest provide additional land and facilities available to the teaching program. Contained within these areas is a wide variety of tree species and forest types ranging from elements of the boreal forest to southern pines and hardwoods. Lumber, pulp and paper, and other wood- using industries cooperate in conducting tours and demonstrating industrial processes.

The department offers two majors. The major in forestry leads to the degree Bachelor of Science in Forestry and the major in wildlife and fisheries science leads to the degree Bachelor of Science in Wildlife and Fisheries.

FOREST RESOURCE MANAGEMENT

The Forest Resource Management Concentration provides an opportunity to obtain an education related to the management of the broad spectrum of wildland resources. In addition to the core of required courses, there are about 18 elective credit hours for broad studies or specialized training in one or more areas of forestry. These areas and examples of related fields of study are: Forest Biology including plant physiology and morphology; ecology, genetics, tree nutrition, forest soils; Forest Business Management including economics, accounting, finance, marketing, management science; Forest Economics including economics, business administration, social science; Forest Inventory including mathematics, statistics, computer science, photogrammetry; Forest Recreation including natural and social sciences; and Wildlife Management including ecology, zoology, botany.

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Total: 135 hours

FOREST RECREATION CONCENTRATION

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Total: 135 hours
processing, wood composites and gluing, and measurement and marketing of wood products, and includes field trips to local industries and extensive use of laboratory facilities on campus. A sound background in basic sciences is required. With elective credits, students may select specific additional coursework in areas of interest that will augment their understanding of industry operations and could include study in business, engineering, or business management. Excellent career opportunities are anticipated in all areas of the industry.

**Hours Credit**

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<thead>
<tr>
<th>Level</th>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
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<tbody>
<tr>
<td>Freshman</td>
<td>English 101, 102</td>
<td>6</td>
<td></td>
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<tr>
<td></td>
<td>Mathematics 141, 142, 143, 144</td>
<td>10</td>
<td></td>
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<tr>
<td></td>
<td>Botany 110, 120</td>
<td>8</td>
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<tr>
<td></td>
<td>Agriculture 101</td>
<td>3</td>
<td></td>
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<tr>
<td></td>
<td>FWF 211</td>
<td>3</td>
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<tr>
<td></td>
<td>'Communications Elective'</td>
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<tr>
<td>Sophomore</td>
<td>Chemistry 100, 110</td>
<td>8</td>
<td></td>
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<tr>
<td></td>
<td>Physics 121, 122</td>
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<tr>
<td></td>
<td>IE 200</td>
<td>4</td>
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<tr>
<td></td>
<td>Mathematics 241</td>
<td>4</td>
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<td></td>
<td>Statistics 251</td>
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<tr>
<td></td>
<td>FWF 311</td>
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<td></td>
<td>Forstey 331, 332</td>
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<tr>
<td>Junior</td>
<td>FWF 312, 313, 315, 316</td>
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<td></td>
<td>Forestry 431, 432</td>
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<tr>
<td></td>
<td>Statistics 252</td>
<td>3</td>
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<tr>
<td></td>
<td>Computer Science 101</td>
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<td></td>
<td>IE 300, 302</td>
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<td></td>
<td>Speech 210 or 240</td>
<td>3</td>
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<tr>
<td></td>
<td>'Humanities and Social Science Elective'</td>
<td>3</td>
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<tr>
<td>Senior</td>
<td>Forestry 433, 434</td>
<td>6</td>
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<tr>
<td></td>
<td>IE 402, 403, 405</td>
<td>6</td>
<td></td>
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<tr>
<td></td>
<td>Economics 201</td>
<td>4</td>
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</tr>
<tr>
<td></td>
<td>'Humanities and Social Science Electives'</td>
<td>12</td>
<td></td>
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<tr>
<td></td>
<td>General Elective</td>
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<tr>
<td>Total: 136 hours</td>
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</tbody>
</table>

Lists of appropriate courses in Communications, and Humanities and Social Sciences are available at the Department of Forestry, Wildlife and Fisheries Office.

**WILDLIFE AND FISHERIES SCIENCE**

Wildlife and fisheries management is the science and art of maintaining populations of wild animals at levels consistent with the best interests of wild species and of the public. Management goals may be aesthetic, economic, or ecological. Success depends upon wildlife and fisheries biologists providing assistance; scholarly application of scientific information and methods to these goals; ecological perspective; and execution of programs to maintain past successes, to prevent repetition of past failures, and to prepare for future needs.

A minor in Wildlife and Fisheries Science consists of 16 hours from FWF 211 or 250, FWF 300, 317, 416, WFS 341, 441, 443, 444 and 445. Prerequisites will not be waived.

**Hours Credit**

<table>
<thead>
<tr>
<th>Level</th>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>English 101, 102</td>
<td>6</td>
<td></td>
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<tr>
<td></td>
<td>Mathematics 119, 121</td>
<td>6</td>
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<tr>
<td></td>
<td>Botany 110, 120</td>
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<td></td>
<td>Economics 201</td>
<td>4</td>
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<tr>
<td></td>
<td>Physics 121</td>
<td>4</td>
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<tr>
<td></td>
<td>Agriculture 101</td>
<td>3</td>
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<tr>
<td></td>
<td>FWF 211</td>
<td>3</td>
<td></td>
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<tr>
<td>Sophomore</td>
<td>Chemistry 100, 110</td>
<td>8</td>
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</tbody>
</table>

Emphasis is on understanding the design process and acquiring the appropriate graphic, scientific, and technical skills. Opportunities include landscape design services, landscape development and maintenance, garden center operation, allied sales, municipal and highway landscaping, park development, and teaching.

Landscape construction begins with a final design plan and involves implementing the plan with all the necessary construction steps including earthwork, paving surfaces, fences, pools, decks, patios, benches, and planting installation. Students learn about basic construction materials, drainage and irrigation, water features, outdoor lighting and other components of landscape construction.

A minor in Wildlife Management involves the growing of trees, shrubs and other ornamental plants for sale. Skills necessary to be a nursery manager include horticultural knowledge and management skills. Opportunities are in nurseries, garden centers, botanical gardens, and arboretums, and in landscape maintenance and installation.

The area of floriculture includes the science of growing flowering plants in field and greenhouse, and the art and science of using these plants for the benefit of humans. Opportunities are available as greenhouse managers, floral designers, retail salespersons, research workers, and related commercial areas. Interior decor development is a significant new field relating to floriculture.

Turfgrass management includes all aspects of growing and caring for turfgrass. The increasing number of golf courses and homes and the emphasis on better quality make new opportunities for turfgrass managers. Such opportunities include golf course superintendents, park and recreational turf managers, operation of a lawn or grounds maintenance business, and sod production.

Courses in business are recommended for students seeking careers in retail, wholesale or service oriented ornamentals industries. Graduates with training in economics, accounting, statistics, business management, finance and marketing are attractive to prospective employers and are better prepared to advance into management positions or organize their own companies. Flexibility in the Ornamental Horticulture and Landscape Design curriculum permits students to qualify for a minor in Business Administration. Students should see their advisors for more information. A minor in Ornamental Horticulture and Landscape Design shall consist of 18 hours of courses in Ornamental Horticulture and Landscape Design. Three of the following four courses must be included: 280, 310, 330, 340. Any of the following may be taken as part of the nine additional hours: 210, 220, 230, 320, 350, 360, 370, 380, 410, 440, 450, 460, 480, 490, 493. Prerequisites, if any, for these courses will not be waived, but must be included in addition to the total of 18 hours.

**Hours Credit**

<table>
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<tr>
<th>Level</th>
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<tbody>
<tr>
<td>Freshman</td>
<td>Agriculture 101</td>
<td>3</td>
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<tr>
<td></td>
<td>English 101, 102</td>
<td>6</td>
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<tr>
<td></td>
<td>Botany 110, 120</td>
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<td></td>
<td>Mathematics 119, 121</td>
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<tr>
<td></td>
<td>Ornamental Horticulture and Landscape Design 110</td>
<td>3</td>
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<tr>
<td></td>
<td>Social Science or Humanities Elective</td>
<td>3</td>
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<td></td>
<td>'Elective'</td>
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<tr>
<td>Sophomore</td>
<td>Chemistry 100, 110</td>
<td>8</td>
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<tr>
<td></td>
<td>Economics 201</td>
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<td></td>
<td>Speech 210 or 240</td>
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PLANT AND SOIL SCIENCE

Professors:
J. E. Foss (Head), Ph.D. Minnesota; F. L. Allen, Ph.D. Minnesota; F. F. Bell (Emeritus), Ph.D. Iowa State; D. L. Coffey, Ph.D. Purdue; R. V. Conger, Ph.D. Washington State; H. A. Frisbie, Ph.D. Iowa State; R. M. Hayes, Ph.D. Illinois; L. M. Josephson (Emeritus), Ph.D. Wisconsin; W. L. Parks (Emeritus), Ph.D. Purdue; J. H. Reynolds, Ph.D. Wisconsin; L. F. Seatz (Emeritus), Ph.D. North Carolina State; J. G. Allen, Coffey, Foss, Graveel, Lessman, Reich, Allen, Ph.D. Iowa State; C. E. Sams, Ph.D. Michigan State; D. R. West, Ph.D. Nebraska.

Associate Professors:

Assistant Professors:
M. E. Essington, Ph.D. California (Riverside); J. Logan, Nebraska; T. C. Mueller, Ph.D. Georgia; G. V. Wilson, Ph.D. Arkansas.

Advisors:
Allen, Coffey, Foss, Graveel, Lessman, Reich, and Reynolds.

Plant and soil science deals with field and vegetable crops and soil resources. Plant science includes crop ecology and physiology; crop breeding and genetics for crop improvement; introduction of new varieties, crop management for high quality products, and weed control for efficient crop production. Soil science includes studies in soil formation and classification for better understanding of our soil resources; soil management for optimum crop production, conservation and environmental quality; soil fertility for efficient nutrient utilization; basic studies in chemistry, physics, and biology as they apply to the soil and to a better understanding of its properties and use.

Many employment opportunities are available for the well-trained plant and soil scientist including positions with public agencies such as Agricultural Extension Services, Soil Conservation Service, Forest Service, Federal Credit Service, and educational institutions. Many plant and soil scientists are also employed in private industry as technical specialists, consultants, supervisors, salespersons, appraisers, advisors, farm managers and in international agriculture.

Students selecting this major must complete the basic curriculum for the College of Agriculture and fulfill the major group requirements. A minor may be selected from among many related disciplines.

Required courses for a major in Plant and Soil Science are 210, 230, 401 and 471 plus 3 courses from Group A and 3 courses from Group B. Of the 6 courses chosen from Groups A and B, one must be a soil science course and one must be a plant science course.


Appropriate selection of the many electives available in the Plant and Soil Science curriculum permits students to select options that meet their interest and career goals. A departmental advisor will assist in designing a program to meet the student's individual objectives. Possible options include field crops, fruits, vegetables, soil and water conservation, plant breeding, pest management, agribusiness, international agriculture, environmental science, etc.

A minor in Plant and Soil Science consists of 16 credit hours including 210, 230, and at least 9 elective hours to be taken by selecting at least one course from each of Group A and Group B. Plant and Soil Science 471 will not be accepted as a course to meet minor requirements.

Hours Credit
Freshman
Agriculture 101
Lower Division Biological Science (110-120 General Botany or 110-120 General Biology)
Chemistry 120-130
English 101, 102
Mathematics 130-151
Sophomore
Plant and Soil Science 210, 230
Physics 121 or 221
Speech 210 or 240
Economics 201
Speaking or Writing Elective
Computer Science 101 or 102 or 100
Humanities or Social Science Elective
Biological or Physical Science Elective
Junior
Humanities or Social Science Electives
Biology 220
Entomology and Plant Pathology 313 or 321
Chemistry 110 or 350
Botany 230
Plant and Soil Science Electives

Total: 132 hours

'List of approved courses in the humanities and social sciences available from the Department of Plant and Soil Science.'