The College of Agricultural Sciences and Natural Resources has a rich history, tracing its roots back to 1899, 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 latter was expanded to include research for the development of new knowledge and extension for dissemination of such knowledge to rural people.

There are many shared resources and positive interactions between various units of the University, exemplified in the College of Agricultural Sciences and Natural Resources. For example, most of the faculty in the College of Agricultural Sciences and Natural Resources hold joint appointments in the Agricultural Experiment Station and the 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 Colleges of Agricultural Sciences and Natural Resources. The College provides curricula 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 for 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 degrees 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 sciences. 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 selection of electives in each curriculum should be made with the guidance of the major advisor.

Students pursuing a program leading to the degree of Bachelor of Science in Agricultural Engineering may select the concentration offered in food engineering. Students seeking the Bachelor of Science in Forestry may choose concentrations in forest resource management, wildlife, 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 college during the semester offering the major/concentration is required.

SATISFACTORY/NO CREDIT COURSES

Students may include a maximum of 21 hours in non-directive 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,
agriculture, economics, agricultural engineering, food technology and science, and plant and soil science. General requirements and policies of 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 campus and 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; McClod Food Technology Building; C.E. Bratton Animal Sciences Building, which includes a large pavilion; Elgin Plant Sciences Building which houses the plant science department; and greenhouses for teaching and experimental work. The buildings which have been erected recently provide 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 (60 acres), Cherokee Farm (550 acres), Plant Sciences Farm (312 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 (2,350 acres), and Ames Plantation (8,000 acres of forested land) provide excellent facilities for forestry research.

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 will be assigned from that department. Students with special interest in science, business, or production technology should consult their advisor about selection of appropriate electives.

MINIMUM REQUIREMENTS FOR BACCALAUREATE DEGREE PROGRAMS
For the degree programs offered in the College, the following minimum requirements apply:

- Agriculture and Renewable Natural Resources Perspectives (3)
- Biological Sciences (College of Agriculture courses included) (8)
- 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)
- 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 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)

2. Bachelor of Science in Agricultural Engineering

3. Bachelor of Science in Agricultural and Rural Sociology

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 of UT, Knoxville, should consult the dean in double checking the curriculum to 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 BUSINESS CURRICULUM

Advisors: Professors Cleland, Eastwood, McRoberts, and Roberts. Associate Professors Johnson and Pompelli. Assistant Professors Davis and Jakus.
A GR CULTURAL EXTENSION EDUCATION

Although no formal undergraduate curriculum is offered in Agricultural Extension Education, undergraduates are available as electives for emphasis on specific topics. These courses are designed to develop an understanding of the central responsibilities and techniques of the Agricultural Extension Service, and to provide perspective and extension employees with the means toward excellence in selected areas.

Agricultural Education

Students 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: agriculture, business, schools, agencies, and farming and ranching. Emphasis is on preparing students to teach agricultural education or to 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 teacher education option is designed to prepare students to meet teacher certification requirements for 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 and Student Teaching section.)

The option provides a broad-based curriculum in the sciences and human studies, with a major in agricultural education. It is designed for those students who wish to prepare for careers with the Agricultural Extension Service, agricultural educators, and farming and ranching. This option does not prepare a student to meet teacher certification requirements.

AGRICULTURAL ENGINEERING AND TECHNOLOGY

Professors: F.D. Tompkins (Head), Ph.D., Pennsylvania State; R.D. Yokley, Ph.D., Ohio State; S.R. Freiwald, Ph.D., Iowa State; J.B. Wilkerson, Ph.D., Purdue; J.B. Wilkerson, Ph.D., Purdue; R.D. Yokley, Ph.D., Ohio State; S.R. Freiwald, Ph.D., Iowa State; J.B. Wilkerson, Ph.D., Purdue; R.D. Yokley, Ph.D., Ohio State; S.R. Freiwald, Ph.D., Iowa State.


Assistant Professors: C.H. Shelton (Emeritus), M.S., Virginia Polytechnic Institute; L.R. Wilhelm, Ph.D., Tennessee State; C.H. Shelton (Emeritus), M.S., Virginia Polytechnic Institute; L.R. Wilhelm, Ph.D., Tennessee State.

Advisors: R.S. Bowers, Ph.D., Massachusetts, Amherst; R.S. Bowers, Ph.D., Massachusetts, Amherst.

Agricultural Education

The Department of Agricultural and Extension Education offers two educational areas of emphasis: Agricultural Extension Education and Agricultural Education.

AGRICULTURAL EXTENSION EDUCATION

Agricultural and Extension Education is designed to prepare students for careers in the agricultural Extension Service, agricultural education, and farming and ranching. This option does not prepare a student to meet teacher certification requirements.

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Agricultural and Extension Education is designed to prepare students for careers in the agricultural Extension Service, agricultural education, and farming and ranching. This option does not prepare a student to meet teacher certification requirements.

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Agricultural Engineering with Concentration in Food Engineering

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<tr>
<th>Course</th>
<th>Hours Credit</th>
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<tr>
<td>Freshman</td>
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<tr>
<td>Agricultural Engineering 105</td>
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<tr>
<td>Basic Engineering 100, 111, 121</td>
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<td>Chemistry 120, 130</td>
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<td>English 101, 102</td>
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<td>Mathematics 141, 142</td>
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<td>Sophomore</td>
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<td>Agriculture 101</td>
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<td>Agriculture Engineering 201</td>
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<td>Basic Engineering 101, 111, 121</td>
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<td>Biostatistics 42</td>
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<td>Business Elective</td>
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<tr>
<td>Computer Science and Mechanics 231, 231</td>
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<td>Humanities/History/Social Science Elective</td>
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<td>Mathematics 200, 201, 241</td>
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<td>Physics 201</td>
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<td>Junior</td>
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<td>Agricultural Engineering 303</td>
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<td>Environmental Science and Policy</td>
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<td>Food Science and Technology 410 or ESM 341 Fluid</td>
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<td>Microbiology 210</td>
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<td>Mechanical Engineering 331</td>
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<td>Mathematics 300</td>
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<td>Mathematics/History/Social Science Elective</td>
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<td>Mathematics Engineering 401</td>
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<td>Mathematics/Microbiology</td>
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<td>Physics 201</td>
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<td>Agricultural Engineering 401</td>
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<td>Agricultural Engineering Design Elective</td>
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<td>Total: 134 hours</td>
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that are major causes of losses in agricultural production, plant pathology and veterinary entomology. Courses of study in entomology or plant pathology, namely, in insects and plant diseases, are available to undergraduate students. Courses in economic entomology, forest pathology is available (see Graduate Catalog). A program leading to a baccalaureated degree with a major in entomology and plant pathology requires a minimum of 18 semester hours as follows: Agricultural Engineering Technology 201, 211, 430, 442 and two of the three courses 432, 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 qualified undergraduates from other disciplines who 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


Associate Professors: J.F. Grant, Ph.D. Clemson; K.D. Stavrinides, Ph.D. North Carolina State; D.R. Redick, Ph.D. Clemson; M.T. Windham, Ph.D. North Carolina State.

Assistant Professor: B.L. May, Ph.D. North Carolina State.

Advisors: C.J. Southard, Gerhardt, Hilty, Lambdin, and Plesk.

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 pathology and veterinary entomology are available to undergraduate students. Elective courses preparatory for specialization. Elective courses offered may be chosen from approved list of courses meeting University requirements as History. Elective courses meeting University requirements as Social Sciences.

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 Biological Sciences.

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

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program early in the pre-veterinary curriculum. The first two semesters in the College of Veterinary Medicine, after the successful completion of a B.S. degree in Agriculture with a major in Animal Science; in business administration, economics, veterinary, and related fields. The program of coursework combines a strong science background with a liberal arts education. The animal science core courses are 220, 260, 330, 340, and 380.

PRE-VETERINARY MEDICINE

This program allows students to be awarded a B.S. degree in Agriculture with a major in Animal Sciences. 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. University Requirement: Social Sciences and Humanities - 18 hours
   c. Calculus A-B, 121-122 or Calculus II, 131-132 or Biochemistry 114, 115-116, 121-122 (3-3) - 6 hours
   d. Elements of Physics 211-222 (4-4) - 8 hours
   e. General Chemistry 120-130 (4-4) - 8 hours
   f. Organic Chemistry 250-260 and Laboratory 250-260 (3-3) - 6 hours
   g. General and Comparative Biochemistry 410-450 (4-4) - 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. This list includes all of the pre-veterinary courses that must be taken at UT, Knoxville.
3. At least 12 hours of upper division (300 and 400 level courses) technical agriculture courses must be taken at UT, Knoxville.
4. In addition to 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. Animal Science 220 - 3 hours
   c. Animal Science 230 - 3 hours
   d. Animal Science 330 - 3 hours
   e. Animal Science 340 - 3 hours
   f. Animal Science 350 - 3 hours
   g. Animal Science 360 - 3 hours
   h. One course from Animal Science 481, 482, 483, 484, 485, 486 - 3 hours
   i. Computer Science Elective - 3 hours
   j. Economics 201 - 3 hours
   k. Speech 210 or 240 - 3 hours
   l. NOTE: Agriculture 101, Economics 201 and Speech 210 or 240 will be accepted by the CVM as meeting requirements in the Humanities/Social Sciences category. The remainder must be a Social Science elective, a Humanities elective, and a Humanities elective described as writing intensive. Writing intensive History courses may also be used.
5. Non-Animal Science Agriculture Electives - 6-7
   a. Animal Science 101 - 1 hour
   b. Agriculture 101, 201, 240, 301 - 3 hours
   c. Economics 201 - 3 hours
   d. Elements of Physics 221-222 (4-4) - 8 hours
   e. General Chemistry 120-130 (4-4) - 8 hours
   f. Microbiology 101, 119, 219, 229, 319, 329, 419 - 6 hours
   g. Mathematics 119, 121, 123-132 - 6 hours
   h. Physics 121, 122, 131, 132 - 8 hours
   i. General Electives - 15-18 hours
   j. Social Sciences and Humanities Electives - 6-7
   k. Speech 210 or 240 - 3 hours

Pre-major: Agriculture 101, 220, 230, 240, 300, 320, 340, 380

Additional: Economics 201 - 3 hours

Hours Credit

Freshman

Agriculture 101 - 3
Animal Science 501 - 3
Biology 110, 120 - 4
Chemistry 120-130 - 8
Mathematics 119, 121, 123-132 - 6

Sophomore

Biology 210, 220 - 8
Computer Science Elective - 3
Speech 210 or 240 - 3
Biology 260, 269 or 360, 369 - 6

Junior

Biology 350, 360-369 - 8

Senior

British Literature 410 - 4
Writing Elective - 3

Course requirements beyond core requirements for PV studies:

All students will need to fulfill Humanities/Social Sciences electives for PV requirements.

This curriculum meets the requirements for entrance to the CVM and provides a strong science background in the first successful year in the CVM, the student will be awarded a B.S. in Agriculture with a major in Animal Sciences. Should the student not gain admittance to the CVM after the Junior year, the student could complete the requirements for a major in Animal Science with a concentration in Science Technology during the Senior year.
### Forestry and Wildlife Resources Concentration

The Forest Resources Management Concentration provides an opportunity to obtain an education related to the management of the biotic spectrum of wildland resources. In addition to the core of required courses, there are about 16 elective credit hours for broad studies of 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 Ecotourism including economics, business administration, social sciences.
- Forest Inventory including, mathematics, statistics, computer science, photogrammetry.
- Forest Recreation including, natural and social sciences.
- Wildlife Management including ecology, zoology, botany.

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 facilities to the teaching program. Compartments within these areas are 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 industries use sections of the forest in the design and manufacturing of wood products and wood composites and gluing.

### Food Science and Technology Concentration

The Food Science and Technology 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.

### Wildlife Recreation Concentration

The Wildlife Recreation Concentration provides opportunities to obtain an education related to the management of the biotic spectrum of wildland resources. In addition to the core of required courses, there are about 16 elective credit hours for broad studies of specialized training in one or more areas of wildlife biology. These areas and examples of related fields of study are:
- Wildlife Management including economics, accounting, finance, marketing, management science.
- Wildlife Ecotourism including economics, business administration, social sciences.
- Wildlife Inventory including, mathematics, statistics, computer science, photogrammetry.
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### Lists of appropriate courses in Social Sciences, Humanities, History, and Communications

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

### Electives

Electives are chosen in consultation with advisor. Lists of appropriate courses in Social Sciences, Humanities, History, and Communications are available at the Department of Forestry, Wildlife and Fisheries.

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### Electives

Electives are chosen in consultation with advisor. Lists of appropriate courses in Social Sciences, Humanities, History, and Communications are available at the Department of Forestry, Wildlife and Fisheries.

### Wildlife Recreation Concentration

The Wildlife Recreation Concentration provides opportunities to obtain an education related to the management of the biotic spectrum of wildland resources. In addition to the core of required courses, there are about 16 elective credit hours for broad studies of specialized training in one or more areas of wildlife biology. These areas and examples of related fields of study are:
- Wildlife Management including economics, accounting, finance, marketing, management science.
- Wildlife Ecotourism including economics, business administration, social sciences.
- Wildlife Inventory including, mathematics, statistics, computer science, photogrammetry.
- Wildlife Recreation including, natural and social sciences.
- Wildlife Management including ecology, zoology, botany.

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 facilities to the teaching program. Compartments within these areas are 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 industries use sections of the forest in the design and manufacturing of wood products and wood composites and gluing.

### Total: 135 hours

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<tr>
<th>Hours</th>
<th>Credit</th>
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<td>Senior</td>
<td>135</td>
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WILDLIFE AND FISHERIES SCIENCE

Freshman

Hours Credit

English 110, 112 .......................... 6
Mathematics 111, 112 .......................... 6
Biology 110, 120 .......................... 6
Economics 201 .......................... 3
Agriculture 101, 200 .......................... 6
Physics 201 .......................... 5

Sophomore

Chemistry 100, 110 .......................... 6
Statistics 201 or Plant and Soil Science 471 .......................... 3
Agriculture 301 .......................... 4
Speech 210 or 310 .......................... 3
Animal Science 200 .......................... 3
Biology 200 .......................... 3

Total: 136 hours

Hours Credit

English 110, 112 .......................... 6
Mathematics 111, 112 .......................... 6
Biology 110, 120 .......................... 6
Economics 201 .......................... 3
Agriculture 101, 200 .......................... 6
Physics 201 .......................... 5

Sophomore

Chemistry 100, 110 .......................... 6
Statistics 201 or Plant and Soil Science 471 .......................... 3
Agriculture 301 .......................... 4
Speech 210 or 310 .......................... 3
Animal Science 200 .......................... 3
Biology 200 .......................... 3

Total: 136 hours

The curriculum in Ornamental Horticulture and Landscape Design provides five general areas of study designed to provide students knowledge and skills needed for successful careers. The areas are landscape design, landscape construction, nursery management, floriculture, and turfgrass management.

Landscape design is the shaping and enhancement of the environment for our use, comfort, and enjoyment. It not only involves the use of plant material to accomplish this goal, but also involves an understanding of the functional requirements for work, recreation, and housing.

Landscape construction begins with the process of acquiring the appropriate graphic, scientific, and technical skills. Opportunities include landscape design services, landscape development and maintenance, garden center operation, retail sales, municipal and highway landscaping, park development, and teaching.

Nursery management focuses on the production, care, and sale of ornamental and fruit plants.

Floriculture includes the study of basic construction material, drainage and irrigation, water features, outdoor and indoor components of landscape construction.

Turfgrass management involves the growing of trees, shrubs and other ornamental plants for sale. Skills necessary to become a turf manager include horticultural knowledge and irrigation skills.

Professors:

G. D. Crater (Head), Ph.D., Ohio State; L. M. Callahan, Ph.D., Rutgers; E. Graham, Ph. D., Pennsylvania State; J. S. Peacock (Emeritus), Ph. D., Michigan State; D. B. Williams, Ph. D., Pennsylvania State.

Assistant Professors:

W. T. Witte, Ph. D., University of Maryland.

Instructors:

G. M. Nenneriz, B.S.L.A., University of West Virginia; W. Starmen, Ph. D., Texas A&M.

Advisors:

Callahan, Crater, Day, McDaniel, Rogers, Wilson

The major in 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, with the student having the option of taking up to 6 hours in addition to the total of 18 hours.

Hours Credit

Agriculture 101, 110 .......................... 6
Mathematics 111, 112 .......................... 6
Biology 110, 120 .......................... 6
Economics 201 .......................... 3
Computer Science Elective .......................... 4
General Elective .......................... 6

Total: 132 hours

Note: Any of the appropriate courses in Communications, and Humanities and Social Sciences are available at the Department of Forestry, Wildlife and Fisheries Office.
PLANT AND SOIL SCIENCE

Professors: J.E. Foss (Head), Ph.D. Minnesota; F.L. Allen, Ph.D. Minnesota; F.R. Ball (Emeritus), Ph.D. Iowa State; L.L. Coffey, Ph.D. Purdue; B.V. Conger, Ph.D. Washington State; H.A. Fribourg, Ph.D. Iowa State; R.M. Hayes, Ph.D. Illinois; J.M. Josephson (Emeritus), Ph.D. Wisconsin; W.L. Parks (Emeritus), Ph.D. Purdue; J.H. Reynolds, Ph.D. Wisconsin; L.F. Beazt (Emeritus), Ph.D. North Carolina State; L.N. Skold (Emeritus), M.S. Kansas State; M.E. Springer (Emeritus), Ph.D. California; H.D. Swingle (Emeritus), Ph.D. Louisiana State; D.D. Tyler, Ph.D. Kentucky.

Associate Professors: J.T. Ammons, Ph.D. West Virginia; D.E. Dayton, Ph.D. North Carolina State; W.A. Krueger, Ph.D. Illinois; G.M. Leshman, Ph.D. Michigan State; R.J. Lewis, Ph.D. North Carolina State; J. Logan, Nebraska; V.H. Reich, Ph.D. Iowa State; C.E. Sams, Ph.D. Michigan State; D.R. West, Ph.D. Nebraska.

Assistant Professors: M.E. Essington, Ph.D. California (Riverside); T.C. Muller, Ph.D. Georgia; G.W. Olson, Ph.D. Arkansas.

Advisors: A. Coffey, Foss, 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 crop breeding and genetics for crop improvement; science includes crop ecology and physiology; crop breeding and genetics for crop improvement; biological sciences and be trained in communication and computer skills. The scientist may

Students should consult with departmental advisor for suggested electives and suggested course of study.

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 Science Includes Crop Ecology and Physiology; Crop Breeding and Genetics for Crop Improvement; Biological Sciences and Be Trained in Communication and Computer Skills. The Scientist May

Hours Credit

Total: 132 hours

*Students with a Mathematics ACT of 30 or more may be admitted on a probationary basis.

Environmental Science and Natural Resources Concentration

The Environmental Science and Natural Resources concentration will give students a background (both field and laboratory) in various ecosystems and acquaint them with problems associated with the management of natural resources. This program is designed to train students to address environmental problems associated with soil and water pollution, land use, and waste disposal. Graduates in this concentration would be trained to work in private industry, on their own as consultants, and in government agencies such as the Environmental Protection Agency, State Health Departments, Soil Conservation Service, and the Cooperative Extension Service to control, remediate, and regulate environmental problems.

(Continued...)