The College of Agriculture 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 Agriculture 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 Agriculture 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 UTK 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 Agriculture. The College provides curricula leading to the degrees of Bachelor of Science in Agriculture, Bachelor of Science in Agricultural Engineering, Bachelor of Sciences in Forestry, Bachelor of Sciences 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 forestry curriculum is 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 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, 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 Agriculture from other than the UTK 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 Agriculture. 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.

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 science, agronomy, agricultural economics, engineering, food technology and sciences, and plant and soil science.

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 Agriculture uses the facilities on the agricultural campus, on University farms located near Knoxville, and on the main University campus. On the agricultural campus, there are facilities for the arts and sciences on the main campus. The Agricultural Engineering Building; McCord Hall; the Dairy Products Building; McLeod Food Technology Building; C. E. Brehm 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 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 (80 acres), Cherokee Farm (550 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 (2,250 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. An advisor 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 so as to form the curricula leading to the degree of Bachelor of Science in Agriculture, in preparation for employment with 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 academic record to complete a double or triple major by satisfying all the requirements in each curriculum. For this purpose, the advisors of each curriculum should be consulted, the dean of the College of Agriculture 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 college areas recorded on their transcripts without regard to course overlap among majors and minors. A minor in a department of the College of Agriculture requires a minimum of 18 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 UTK. Specific requirements are listed by each department offering a minor. Minors offered in the College of Agriculture 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 (8)
Biological Sciences (College of Agriculture courses included) (8)
Computer Science (3)
English and Communications (12)
English Composition (6)
Speech (3)
Writing or Speaking elective (3)
Mathematics (6)
Physical Sciences (Chemistry, Physics, Geology) (8)
Social Sciences and Humanities (12)
Economics (4)
Electives (6)
Directed Electives (6)
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 exceeded.

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 Agriculture from another institution, or from another college at UTK, 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:

M. B. Badenhop, Ph. D. Purdue; J. R. Brooker, Ph. D. Florida; C. L. Cleland, Ph. D. Wisconsin; I. Dubov, Ph. D. California (Berkeley); D. B. Eastwood, Ph. D. Tufts; L. H. Keller, Ph. D. Kentuck; T. H. Kliindt (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. Pentecost (Asst. Vice Pres.), J. D. Tennessee; W. P. Ranney (Emeritus), Ph. D. Minnesota; C. B. Sappington, 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; R. K. Roberts, Ph. D. Iowa State; R. W. Todd, J. D. Tennessee.

4College 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)
Agricultural and Extension Education

Professors:
C. E. Carter, Jr., Ph. D. Ohio State; L. H. Dickson, Ed. D. Cornell.

Associate Professors:

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 training counties.

Agricultural Education

Students who complete the requirements for graduation in Agricultural Education receive a Bachelor of Science Degree in Education 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 vocational agriculture or serve as an educator with the Agricultural Extension Service. Students may choose to concentrate in either 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 vocational agriculture. 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.)

Students meeting the requirements for general vocational agriculture certification may secure endorsements in ornamental horticulture and/or agriculture by meeting the following requirements:

1. Ornamental horticulture - 12 semester hours of courses in ornamental horticulture and landscape design and/or plant and soil sciences. 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.

Total: 132 hours

Hours Credit

<table>
<thead>
<tr>
<th>Course (Major)</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>Mathematics 110, 121</td>
<td>6</td>
</tr>
<tr>
<td>English 101, 102</td>
<td>6</td>
</tr>
<tr>
<td>Economics 201</td>
<td>6</td>
</tr>
<tr>
<td>Sophomore</td>
<td></td>
</tr>
<tr>
<td>Agricultural Education 210</td>
<td>3</td>
</tr>
<tr>
<td>Junior</td>
<td></td>
</tr>
<tr>
<td>Agricultural Education 210</td>
<td>3</td>
</tr>
<tr>
<td>Sophomore</td>
<td></td>
</tr>
<tr>
<td>Computer Science 100</td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Education 210</td>
<td>3</td>
</tr>
<tr>
<td>Associate Professors:</td>
<td></td>
</tr>
<tr>
<td>Robert Lessly (Head), Ed. D. Oklahoma State</td>
<td></td>
</tr>
<tr>
<td>J. D. Todd, Ed. D. Illinois</td>
<td></td>
</tr>
<tr>
<td>The Department of Agricultural and Extension Education has two educational areas of emphasis; namely, Agricultural Extension Education and Agricultural Education.</td>
<td></td>
</tr>
<tr>
<td>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 training counties.</td>
<td></td>
</tr>
<tr>
<td>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 vocational agriculture 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.</td>
<td></td>
</tr>
<tr>
<td>The teacher education option is designed to prepare students to meet teacher certification requirements for vocational agriculture. 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.)</td>
<td></td>
</tr>
<tr>
<td>Students meeting the requirements for general vocational agriculture certification may secure endorsements in ornamental horticulture and/or agriculture by meeting the following requirements:</td>
<td></td>
</tr>
<tr>
<td>1. Ornamental horticulture - 12 semester hours of courses in ornamental horticulture and landscape design and/or plant and soil sciences. Subject matter areas must include plant propagation, greenhouse management, growing media, landscape design and nursery management.</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Total: 132 hours</td>
<td></td>
</tr>
</tbody>
</table>
Agricultural Engineering and Technology

Professors:

Associate Professors:
R. D. vonBernuth, Ph.D. Nebraska, P.E.; C. R. Mote, Ph.D. Ohio State, P.E.

Assistant Professor:
D. O. Baxter, M.S. Missouri.

Advisors:
Professors Luttrell, Bledsoe, Henry, McDow, Tompkins, and Wilhelm. Associate Professors Mote and von Bernuth.

The College of Agriculture, 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 teaches students in analysis and design skills to solve engineering problems in agriculture. In the senior year comprehensive design of systems and their components is emphasized.

Graduates may pursue careers in design, analysis, or development in agricultural power and machinery, agricultural structures and environment, agricultural electrical and electronic systems, processing and materials handling systems, and soil and water conservation engineering.

The curriculum provides elective courses which can be taken in the student’s area of interest. Students must check with their advisors each semester regarding the selection of courses and should decide on an area of interest before starting the junior year.

In cooperation with the Food Technology and Science Department, an agricultural engineering degree with a concentration in food engineering is offered in a four year curriculum which differs significantly from the regular agricultural engineering program. Students majoring in agricultural engineering are eligible to participate in the Engineering Cooperative Scholarship program, Engineers’ Day program, and other student activities in the College of Engineering. They are also eligible for selection into Tau Beta Pi and Alpha Zeta. Agricultural engineering majors interested in the Cooperative Engineering Scholarship program should consult with the head of the Department of Agricultural Engineering.

Agricultural Engineering

Hours Credit

Freshman
Basic Engineering 100, 101, 111, 121, 131........... 13
Chemistry 120, 130 ........................................... 8
Biology 110, 120 or Botany 110 ................. 1

Sophomore
Agriculture 101 ............................ 3
Agricultural Engineering 200 ................. 1
Biological or Socio-Economic Sciences 231, 321, 341 ..... 9
3

Junior
Agricultural Engineering 300 ................. 2
Agricultural Engineering Basic Courses Basic Engineering 201 ................. 2
Electrical Engineering 301, 302 ................. 6
Industrial Engineering 409 ................. 2
3
3

Senior
Agricultural Engineering 400, 410, 420, 425 ........ 7
Design Electives .................................. 6
Economics 201 ........................................... 4
English 457 ........................................... 3
3
3

Nature of course equivalent to those required for the engineering technology or who completed a four-year curriculum leading to the degree of Bachelor of Science in agricultural engineering. The curriculum trains students in analysis and design techniques and systems of engineering to solve problems in agriculture. In the senior year comprehensive design of systems and their components is emphasized.

Graduates may pursue careers in design, analysis, or development in agricultural power and machinery, agricultural structures and environment, agricultural electrical and electronic systems, processing and materials handling systems, and soil and water conservation engineering.

The curriculum provides elective courses which can be taken in the student’s area of interest. Students must check with their advisors each semester regarding the selection of courses and should decide on an area of interest before starting the junior year.

In cooperation with the Food Technology and Science Department, an agricultural engineering degree with a concentration in food engineering is offered in a four year curriculum which differs significantly from the regular agricultural engineering program. Students majoring in agricultural engineering are eligible to participate in the Engineering Cooperative Scholarship program, Engineers’ Day program, and other student activities in the College of Engineering. They are also eligible for selection into Tau Beta Pi and Alpha Zeta. Agricultural engineering majors interested in the Cooperative Engineering Scholarship program should consult with the head of the Department of Agricultural Engineering.

Agricultural Engineering With Concentration In Food Engineering

Hours Credit

Freshman
Basic Engineering 100, 101, 111, 121, 131........... 13
Chemistry 100, 110 ........................................... 8
**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. Hilly, Ph. D. Ohio State; L. F. Johnson, Ph. D. Louisiana State; P. L. Lambdin, Ph. D. VPI and SU; C. D. Pless, Ph. D. Clemson.

Assistant Professors:

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

Advisors:

Southards, Gerhardt, Hilly, 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 undergraduate students.

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 understanding of insects and microorganisms, their ecology, population dynamics, potential damage to plants and plant products, and various considerations in control alternatives.

**Animal Science**

Professors:

D. O. Richardson (Head), Ph. D. Ohio State; K. M. Barth, Ph. D. Rutgers; M. C. Bell (Emeritus), Ph. D. Oklahoma State; J. K. Bielner (Emeritus), Ph. D. Ohio State; C. G. Chamberlain (Emeritus), Ph. D. Iowa State; B. H. Erickson, Ph. D. Kansas State; O. G. Hall (Dean), Ph. D. Iowa State; S. L. Hansard (Emeritus), Ph. D. Florida; E. R. Lidwall, M. S. Tennessee; T. P. McDonald, Ph. D. Tennessee; J. B. McLaren, Ph. D. Auburn; G. M. Merriman (Emeritus), D. V. M. Michigan State; J. K. Miller, Ph. D. Georgia; M. J. Montgomery, Ph. D. Illinois; R. R. Shrode, Ph. D. Iowa State; R. L. Tugwell (Emeritus), Ph. D. Kansas State.

Associate Professors:


Assistant Professors:

G. A. Baumbach, Ph. D. Florida; B. R. Bell, Ph. D. North Carolina State; A. B. Chestnut, Ph. D. Illinois; W. C. Cullen, Ph. D. Minnesota; J. D. Godkin, Ph. D. Massachusetts; S. P. Oliver, Ph. D. Ohio State; S. E. Oroz, Ph. D. D. V. M. Ohio State; J. D. Smalling, Ph. D. Texas A&M.

Advisors:

Professors Barth, Erickson, Lidvall, McLaren, Montgomery, Richardson, Shirley and Shrode. Associate Professors Backus, Heitmann, Hitchcock, Kattesh, Masincupp, Robbins and Waller. Assistant Professors B. Bell, Godkin, Oliver and Smalling.

The curriculum is designed to prepare students for leadership careers in livestock production and related industries. Courses in 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, managerial or marketing groups, other 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 18 credit hours including 261 (3), 281 (4), and 11 credits from 321 (3), 322 (3), 331 (3), 332 (3), one of the 360 series (2) and one of the 480 series (3). Requests for substitution of similar courses in biology or zoology will be considered on an individual basis. It is suggested that the selection from the 360 series and one of the 480 series deal with the same class of livestock.

| Hours Credit | English 101-102 6 | Mathematics 121-122 or 141-142 or 151-152 6 | Biology 110-120 6 | Chemistry 100-111 or 120-130 8 | Agriculture 101 3 | Animal Science 101 3 | Humanities/Social Science elective 3 | English/Communications elective 3 | Microbiology 210 6 | Chemistry, Physics, or Geology elective 3 | Animal Science 261, 281 7 | Statistics 201 3 | Computer Science Elective 3 | Biology 220 3 | Plant and Soil Science 411 4 | Animal Science 341, 321, 323, 322, 332 15 | Humanities/Social Science 6 | English/Communications Elective 3 | Economics 280 3 | Free Electives 9 | Non-Animal Science Agriculture 3 | Senior Animal Science, 2 of 481, 482, 483, 484, 485, 486, or 489 (6 hours); 495 (1 hour) 7 | Non-Animal Science Agriculture 9 | Free Electives 16 |
|-------------|-----------------|-------------------------------|-------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Total: 132 hours |

Combined Program Prevet B. S. Degree

This program allows students to be awarded a B.S. degree in Agriculture with a major in Animal Science or plant pathology and an Associate of Veterinary Medicine (A.V.M.) degree. To complete the pre-veterinary curriculum, students must be admitted by January 1 of the second year in the College of Veterinary Medicine (CVM) at UTK.

The curriculum includes courses in biology, zoology, chemistry, physics, and statistics, etc. Electives are selected to satisfy the student's interests and preparation for more specialized study.

Combined Program: Prevet B. S. Degree

1. Completion of all pre-veterinary requirements.

2. The last 30 hours of the three-year pre-veterinary curriculum must be taken at UTK.

3. At least 12 hours of upper division (300 and 400 level courses) technical agriculture courses must be taken at UTK.

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. Agriculture 101 - 3 hours

b. Animal Science 261, 281 - 7 hours

c. Animal Science 322 - 3 hours

d. Animal Science 331 - 3 hours

e. Animal Science 341 - 3 hours

f. One of Animal Science 481, 482, 483, 484, 485, 486, or 489 - 3 hours

g. Computer Science - 3 hours

h. Economics 201 - 3 hours

5. Satisfactory completion of the first two semesters in the CVM professional program.

6. No later than January 31 of the student's first year in the CVM the student 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.

| Hours Credit | English 101-102 6 | Mathematics 121-122 or 141-142 or 151-152 6 | Biology 110-120 6 | Chemistry 120-130 8 | Agriculture 101 3 | Animal Science 101 3 | Humanities/Social Science 6 | English/Communications 3 | Economics 280 3 | Free Electives 9 | Non-Animal Science Agriculture 3 | Senior Animal Science, 2 of 481, 482, 483, 484, 485, 486, or 489 (6 hours); 495 (1 hour) 7 | Non-Animal Science Agriculture 9 | Free Electives 16 |
|-------------|-----------------|-------------------------------|-------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Total: 132 hours |
The program of coursework conforms to the guidelines in 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: 410, 420-429, 410 or 411, 440, and one elective course in Food Technology and Science.

### Hours Credit

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture 101</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry 120, 130</td>
<td>8</td>
</tr>
<tr>
<td>English 101, 102</td>
<td>8</td>
</tr>
<tr>
<td>Food Technology and Science</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics 110, 121</td>
<td>6</td>
</tr>
<tr>
<td>Social Sciences and Humanities Electives</td>
<td>6</td>
</tr>
<tr>
<td>Social Sciences and Humanities Electives</td>
<td>3</td>
</tr>
<tr>
<td>Biology 120</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry 110</td>
<td>4</td>
</tr>
<tr>
<td>Economics 201</td>
<td>4</td>
</tr>
<tr>
<td>Microbiology 210</td>
<td>3</td>
</tr>
<tr>
<td>Physics 121</td>
<td>3</td>
</tr>
<tr>
<td>Speech 210</td>
<td>3</td>
</tr>
<tr>
<td>Communications Elective</td>
<td>3</td>
</tr>
<tr>
<td>Computer Science Elective</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
</tr>
</tbody>
</table>

### Total: 102 hours

*Courses required beyond PV requirements for PV-BIB combined program.

This curriculum meets the requirements for entrance to the CVM and after the first successful year in the CVM, the student will be awarded a B.S. in Agriculture with a major in Animal Science. 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 during the Senior year.

### Food Technology and Science

#### Professors:
- H. O. Jaynes (Head), Ph. D. Illinois
- J. L. Collins, Ph. D. Maryland; S. L. Melton, Ph. D. Tennessee
- J. T. Miles (Emeritus), Ph. D. Tennessee
- D. M. Ostermeier, Ph. D. Syracuse

#### Associate Professors:
- J. R. Mount, Ph. D. Ohio State; J. L. Collins, Ph. D. Maryland; S. L. Melton, Ph. D. Tennessee
- J. T. Miles (Emeritus), Ph. D. Tennessee
- R. L. Little, Ph. D. North Carolina State; K. F. Schell, Ph. D. Duke

#### Assistant Professors:
- B. L. Dearden, Ph. D. Colorado State; R. L. Hay, Ph. D. Duke; J. C. Rennie; Ph. D. North Carolina State

#### Faculty:
- F. A. Draughon, Ph. D. Georgia; B. J. Demott, Ph. D. Michigan State; P. M. Davidson, Ph. D. Washington State; J. W. Barrett (Emeritus); Ph. D. Syracuse; E. R. Buckner, Ph. D. North Carolina State; J. L. Byford, Ph. D. Auburn; H. A. Core (Emeritus); Ph. D. Syracuse; R. W. Dimmick, Ph. D. Wyoming; W. E. Hammitt, Ph. D. Michigan; R. L. Little, Ph. D. North Carolina State; D. M. Ostermeier, Ph. D. Syracuse; M. R. Pelton, Ph. D. Georgia; G. Schneider (Associate Dean, College of Agriculture), Ph. D. Michigan State; E. Thor (Emeritus), Ph. D. North Carolina State; J. L. Wilson, Ph. D. Tennessee; F. W. Woods, Ph. D. Tennessee.

#### Associate Professors:
- S. E. Scharbaum, Ph. D. Colorado State; P. M. Winistorfer, Ph. D. Iowa State.

The department offers two majors. The major in Industrial Science for the Bachelor of Science in Forestry and the major in Forestry and Fisheries science leads to the Bachelor of Science in Forestry and Fisheries Science. The forestry major has three concentrations: Forest Resource Management Concentration, Forest Recreation Concentration, and Wood Utilization Concentration.

### Forestry

The profession of forestry is the science, the art, and the practice of managing and using for human benefit the natural resources which occur on and in association with forest lands. Benefits are derived from the multiple resources of the forest: wood, water, wildlife, recreation, forage, and environmental amenities. Foresters are managers of these resources. Thus, our principal instructional objective is to provide the broad education needed to deal effectively with the complex of forest resources.

A minor in Forestry consists of 16 credit hours as follows: FWF 211 or FWF 250, FWF 311 and 9 hours of courses having a Forestry designation. Prerequisites will not be waived.

#### FOREST RESOURCE MANAGEMENT CONCENTRATION

The Forest Resource Management Concentration provides an opportunity to obtain an education related to the management of the broad spectrum of woody resources. In addition to the core of required courses, there are about 15 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.

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.umber, pulp and paper, and other woody industries cooperate in conducting tours and demonstrating industrial processes.

### Hours Credit

#### Freshman
- English 101, 102 .............................................. 6
- Mathematics 130, 151 ........................................ 7
- Botany 110, 120 .................................................. 8
- Chemistry 100 ................................................... 4
- Agriculture 101 .................................................. 3
- FWF 211 ............................................................. 3
- FWP 311 ............................................................. 3
- Psychology 110, 360 .......................................... 4
- Communications 200 ........................................... 3
- OHLD 280 .......................................................... 3
- Humanities Elective .............................................. 3
- Multidiscipline/Multiculture Elective ......................... 3

#### Sophomore
- Economics 201 ................................................... 4
- Statistics 201 ...................................................... 3
- Computer Science 101 ....................................... 3
- Sociology 210 or 240 ......................................... 3
- FWF 311 ............................................................. 3
- Forestry 331, 332 ................................................. 3
- Social Sciences Elective ....................................... 3
- Humanities Elective ............................................ 3
- Communications Elective ...................................... 3
- Multidiscipline/Multiculture Elective ......................... 3
- Restricted Electives .............................................. 3

#### Junior
- FWF 300, 312, 313, 315, 316, 317 .......................... 14
- Forestry 321, 322, 323, 324, 325 .......................... 15
- EPP 306 ............................................................. 3

#### Senior
- FWF 300, 416 ...................................................... 4
- Forestry 421, 422 ............................................... 4
- Social Science Elective ........................................ 6
- History Elective .................................................. 3
- Humanities Electives .......................................... 6
- Restricted Electives .............................................. 3
- General Electives ............................................... 5

Total: 135 hours

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

### WOOD UTILIZATION CONCENTRATION

The Wood Utilization Concentration trains students for careers in forest products such as lumber, furniture, pulp, and paper, or wood composites. Coursework is oriented toward the application of wood technology and engineering principles to wood processing. A sound background in basic sciences is required.

Demand for forest products is forecasted to increase. This increased demand should continue to provide excellent opportunities for forest products graduates.

### Hours Credit

#### Freshman
- English 101, 102 .............................................. 6
- Mathematics 141, 142, 143, 144 .......................... 10
- Botany 110, 120 ............................................... 8
- Agriculture 101 ................................................. 3
- FWF 211 ............................................................. 3
- Communications Elective ...................................... 3
- Economics 201 ................................................... 4
- IE 200, 304 ......................................................... 6
- Mathematics 241 ............................................... 4
- Statistics 251 ..................................................... 3
- FWF 311 ............................................................. 4
- Forestry 331, 332 ................................................. 3

#### Sophomore
- FWF 312, 313, 315, 316 .................................... 10
- Forestry 431, 432 ............................................... 5
- Statistics 252 ..................................................... 3
- Computer Science 101 ....................................... 3
- IE 300, 302 ......................................................... 7

#### Junior
- Speech 210 or 240 ............................................. 3
- Humanities and Social Science Elective ...................... 3

#### Senior
- Forestry 433, 434 .............................................. 6
- IE 402, 403, 405 ................................................. 8
- Economics 201 ................................................... 4
- Humanities and Social Sciences Electives .................... 12
- General Elective ................................................ 3

Total: 136 hours

1. Lists of appropriate courses in Humanities and History 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 as follows: FWF 211 or 250, FWF 300, WFS 341, 441, 443, and 444 or 445. Prerequisites will not be waived.

---

**Ornamental Horticulture and Landscape Design**

Professors:

G. D. Crater (Head), Ph. D. Ohio State; L. M. Callahan, Ph. D. Rutgers; E. T. Graham, Ph. D. Pennsylvania State; G. L. McDaniel, Ph. D. Iowa State; N. D. Peacock (Emeritus), Ph. D. Michigan State; H. van de Werken, GAVST, Horticulture College (Frederiksoord, Holland); D. B. Williams, Ph. D. Pennsylvania State.

Associate Professor:

J. W. Day, Ph. D. Mississippi State.
Assistant Professor:
S. M. Rogers, M. L. A. University of Georgia.

Instructor:
Sue Wilson, M. S. Ohio State.

Advisors:
Callahan, Crater, Day, McDaniel, Rogers, van de Werken, and Williams.

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. 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.

Nursery 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 producing 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. Interiorscape 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 home lawns 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. Minor in Ornamental Horticulture and Landscape Design

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, 410, 440, 450, 460, 480, 490, 493.

Prerequisites, if any, to these courses will not be waived, but must be included in addition to the total of 18 hours.

### Hours Credit

#### Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture 101</td>
<td>3</td>
</tr>
<tr>
<td>English 101, 102</td>
<td>6</td>
</tr>
<tr>
<td>Botany 110, 120</td>
<td>12</td>
</tr>
<tr>
<td>Mathematics 111, 121</td>
<td>6</td>
</tr>
<tr>
<td>Ornamental Horticulture and Landscape Design 110</td>
<td>3</td>
</tr>
<tr>
<td>Social Science or Humanities Elective</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>Sophomore</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 100, 110</td>
<td>8</td>
</tr>
<tr>
<td>Economics 201</td>
<td>4</td>
</tr>
<tr>
<td>Speech 210 or 240</td>
<td>3</td>
</tr>
<tr>
<td>Social Science or Humanities Elective</td>
<td>3</td>
</tr>
<tr>
<td>Ornamental Horticulture and Landscape Design 220, 280</td>
<td>5</td>
</tr>
<tr>
<td>Plant and Soil Science 210</td>
<td>3</td>
</tr>
<tr>
<td>Computer Science 100</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ornamental Horticulture and Landscape Design 310, 330, 340, 370</td>
<td>12</td>
</tr>
<tr>
<td>Botany 321</td>
<td>4</td>
</tr>
<tr>
<td>Entomology and Plant Pathology 313, 321</td>
<td>6</td>
</tr>
<tr>
<td>Agriculture Elective</td>
<td>3</td>
</tr>
<tr>
<td>Writing or Speech Elective</td>
<td>3</td>
</tr>
<tr>
<td>Ornamental Horticulture and Landscape Design Elective</td>
<td>2-3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ornamental Horticulture and Landscape Design 410, 490</td>
<td>4</td>
</tr>
<tr>
<td>Ornamental Horticulture and Landscape Design Elective</td>
<td>3</td>
</tr>
<tr>
<td>Social Science or Humanities Elective</td>
<td>3</td>
</tr>
<tr>
<td>Biological Science or Physical Science Elective</td>
<td>6</td>
</tr>
<tr>
<td>Electives</td>
<td>17-18</td>
</tr>
</tbody>
</table>

Total: 132 hours

1 General Biology 110, 120 may be substituted for Botany only if taken before entering Ornamental Horticulture and Landscape Design.
2 Students should consult with departmental advisor for suggested electives and suggested course of study.

### Plant and Soil Science

Professors: J. E. Foss (Head), Ph. D. Minnesota; F. F. Bell (Emeritus), Ph. D. Iowa State; D. L. Coffey, Ph. D. Purdue; B. V. Conger, Ph. D. Washington State; H. A. Fribourg, Ph. D. Iowa State; L. M. Josephson (Emeritus), Ph. D. Wisconsin; W. L. Parks, Ph. D. Purdue; B. S. Pickett (Emeritus), Ph. D. Michigan State; J. H. Reynolds, Ph. D. Wisconsin; L. F. Seatz (Emeritus), Ph. D. North Carolina State; L. N. Skold (Emeritus), M. S. Kansas State; M. E. Springer (Emeritus), Ph. D. California (Berkeley); H. D. Swingle (Emeritus), Ph. D. Louisiana State; E. Winters (Emeritus), Ph. D. Illinois.

Associate Professors:

R. J. Lewis, Ph. D. North Carolina State; V. H. Reich, Ph. D. Iowa State; C. E. Sams, Ph. D. Michigan State; D. D. Taylor, Ph. D. Kentucky; D. R. West, Ph. D. Nebraska; J. D. Wolf, Ph. D. Auburn.

Assistant Professors:
J. G. Graveel, Ph. D. Purdue; D. J. Logan, Nebraska; G. N. Rhodes, Jr., Ph. D. North Carolina State.

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

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.

The plant and soil scientist must have knowledge of the basic physical, chemical, and biological sciences and be trained in communication and computer skills. The scientist may be broadly trained or may specialize in a more specific phase of the subject.

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 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 plant science course and one must be a plant science course.

**Group A:** Plant and Soil Science 311, 312, 331, 332, 333, 334.
**Group B:** Plant and Soil Science 411, 412, 413, 414, 431, 433, 453.

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, agriculture, 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 ........................................... 3
- Lower Division Biological Science (110-120 General Botany or 110-120 General Biology) .................. 8
- Chemistry 120-130 ........................................ 8
- English 101, 102 ............................................. 8
- Mathematics 130-151* .................................. 6-8

**Sophomore**
- Plant and Soil Science 210, 230 .......................... 7
- Physics 121 or 221 ....................................... 3-4
- Speech 210 or 240 ....................................... 3
- Economics 201 ........................................... 4
- Speaking or Writing Elective ............................ 3
- Computer Science 101 or 102 or 100 .................. 3
- Humanities or Social Science Elective ................. 3
- Biological or Physical Science Elective ............... 4
- Junior
  - Humanities or Social Science Electives ............ 9
  - Biology 220 ............................................. 3
  - Entomology and Plant Pathology 313 or 321 ....... 3
  - Chemistry 110 or 350 ................................ 3-4
  - Botany 321 ............................................. 4

**Senior**
- Plant and Soil Science Electives ........................ 12
- Animal Science Elective ................................ 3
- Plant and Soil Science Electives ........................ 6
- Non-Departmental Agricultural Electives ............... 6
- Social Science or Humanities Elective ................. 2-3
- Electives (open) ........................................ 11-16

Total: 132 hours

*Students with a Mathematics ACT of 26 or more or a satisfactory placement test score should take Mathematics 151-152 or 141-142.