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 of Engineering and Technology. The forest resources management and wildlife 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 specialization, particularly 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. The use of transfer credit in technical and professional courses is permitted to students transferring into the College of Agricultural Sciences and Natural Resources from other than the UT Knoxville campus. Students must complete the requirements in one of the selected curricula. Students pursuing 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 elective courses 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, and natural resources.

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 administrative 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 College of Veterinary Medicine located on the Knoxville campus.

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

CURRICULUM IN AGRICULTURE

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 of Engineering and Technology. The forest resources management and wildlife 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. The use of transfer credit in technical and professional courses is permitted to students transferring into the College of Agricultural Sciences and Natural Resources from other than the UT Knoxville campus. Students must complete the requirements in one of the selected curricula. Students pursuing 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 elective courses 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, and natural resources.

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 administrative 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 University of Tennessee. 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.

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GRADUATE STUDY IN AGRICULTURE

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Two separate administrative 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 University of Tennessee. 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 elective courses 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, and natural resources.
The College of Agricultural Sciences and Natural Resources is unique in that it provides an academic environment specifically designed to help students achieve their educational goals in agriculture, forestry, and natural resources. The college offers programs that prepare students for careers in a variety of fields, including agricultural economics, agricultural engineering, forestry, and natural resources management. The college is committed to providing a high-quality education that is both practical and theoretical, with a strong emphasis on research and service to the community.

SELECTION OF CURRICULUM

Students are encouraged to work with their advisors to select a curriculum that best matches their interests and career goals. The college offers a variety of curricula, including those designed for students interested in business, environmental science, and natural resources management. Each curriculum is designed to provide students with the knowledge and skills necessary for success in their chosen field.

MINIMUM REQUIREMENTS FOR BACCALAUREATE DEGREE PROGRAMS

All B.S. degree programs offered in the College have the following minimum requirements:

- Bachelor of Science in Agriculture
- Bachelor of Science in Forestry
- Bachelor of Science in Environmental Science
- Bachelor of Science in Natural Resources

A very careful choice of electives enables a student to complete a double or triple major by satisfying all the requirements in each curriculum. For this purpose, the advisor 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 multipurpose major normally requires more than 130 hours of credit for graduation.

OPTIONAL MINORS

Agricultural students may select one or more minors in agriculture or in other colleges registered 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 18 credit hours in courses numbered 200 and above with the majority of credit hours at the 300 and 400 level. At least 6 of the credit hours required for the minor must be completed at UT Knoxville.
AGRICULTURAL EXTENSION EDUCATION

Although no formal undergraduate curriculum is offered in Agricultural Extension Education, undergraduates are courses available as electives in wash formal curricula. 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 experience in work selected training courses.

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 administrator 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.)

Students who choose the professional services option may substitute additional technical courses in agriculture and/or internship hours equivalent to the number of hours of student teaching required in the teacher education option with advance approval from the extension faculty. Specifically, for certification, may also be substituted in courses in the 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.

AGRICULTURAL AND EXTENSION EDUCATION

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

The department offers a variety of courses, and includes electives in the areas of agriculture, economics, and rural sociology. Electives include courses in economics, sociology, anthropology, political science, and other relevant fields.

AGRICULTURAL ENGINEERING

Professors: R.L. Lovins (State); E.D. Oklahoma State; C.E. Carter, Jr.; Ph.D. Ohio State; L.H. Dickson (Entomology); E.D. Oklahoma State; G.A. Bird (Entomology); E.D. Oklahoma State; G.A. Bird (Entomology). Associate Professor: R.G. Dovis, Ph.D. Penn State.

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, and research and testing organizations, and foreign service agencies offer employment opportunities to agricultural engineers.

In addition to general requirements for admission to the University, the minimum requirements for the degree 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
Agricultural Engineering with Concentration in Biological Engineering

Hours Credit
Freshman
Agricultural Engineering 106 ........................................... 3
Basic Engineering 100, 111, 121 ........................................ 7
Chemistry 120, 130 ............................................................. 8
English 101, 102 ............................................................... 6
"Mathematics 141, 142 ..................................................... 8
Sophomore
Agricultural Engineering 201 ............................................. 3
Basic Engineering 191, 192 ................................................ 6
"Biology Electives .......................................................... 6
"Chemistry Electives ....................................................... 6
"Mathematics 200, 202, 212 ................................................ 8
"Physics 231 ................................................................. 3
Junior
Agricultural Engineering 303, 451 ..................................... 6
"Agricultural Engineering Electives ................................. 8
"Basic Biology Electives I & II ........................................... 8
"Electrical and Computer Engineering 301 ....................... 3
"Mathematics Electives ................................................... 6
"Physics 231 ................................................................. 3
Senior
Agricultural Engineering 301, 450 .................................... 10
"Agricultural Engineering Electives ................................. 10
"Chemistry Electives ....................................................... 6
"Electrical and Computer Engineering 301 ....................... 3
"Engineering Science and Mechanics 231, 321 .................. 6
"Mathematics Electives ................................................... 6
"Physics 231 ................................................................. 3
Total: 134 hours

*or equivalent honors courses.

If mathematics ACT C is less than 28 or placement test score is unsatisfactory, take mathematics 120 prior to 141 (see advisor for alternate course schedule). Students may repeat one or two courses 422, 452, 462.

Specialization in Bioprocess Systems Design or Agricultural Biotechnology.


*Eligibility for design courses may depend on the student's area of interest. Students must consult with their advisor.

Agricultural Engineering with Concentration in Food Engineering

Hours Credit
Freshman
Agricultural Engineering 106 ........................................... 3
Basic Engineering 100, 111, 121 ........................................ 7
Chemistry 120, 130 ............................................................. 8
English 101, 102 ............................................................... 6
"Mathematics 141, 142 ..................................................... 8
Sophomore
Agricultural Engineering 201, 243 ..................................... 4
"Biology Electives I & II .................................................... 8
"Basic Engineering 101, 131 .............................................. 6
"Engineering Science and Mechanics 231, 321 .................. 6
"Mathematics 200, 231, 244 ............................................. 8
"Physics 231 ................................................................. 3
Junior
Agricultural Engineering 303, 451 ..................................... 6
"Agricultural Engineering Electives ................................. 8
"Basic Biology Electives I & II ........................................... 8
"Electrical and Computer Engineering 301 ....................... 3
"Mathematics Electives ................................................... 6
"Physics 231 ................................................................. 3
Senior
Agricultural Engineering 311, 400 .................................... 10
"Agricultural Engineering Electives ................................. 10
"Chemistry Electives ....................................................... 6
"Electrical and Computer Engineering 301 ....................... 3
"Engineering Science and Mechanics 231, 321 .................. 6
"Mathematics Electives ................................................... 6
"Physics 231 ................................................................. 3
Total: 134 hours

*or equivalent honors courses.

If mathematics ACT C is less than 28 or placement test score is unsatisfactory, take mathematics 120 prior to 141 (see advisor for alternate course schedule). Students may repeat one or two courses 422, 452, 462.

Specialization in Bioprocess Systems Design or Agricultural Biotechnology.


*Eligibility for design courses may depend on the student's area of interest. Students must consult with their advisor.

Agricultural Engineering Technology

Advisors: Professors Bednar, Harl, Henry, McCow, Majerova, Wilkerson, Womac, Yoder and Yoder.

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 202, 212, 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 B.S. graduates from other disciplines who are interested in agricultural engineering technology or who completed courses equivalent to those required for the minor in agricultural engineering technology.
ANIMAL SCIENCE

Professors:
K.R. Robbins (Head), Ph.D., Illinois; M.K. Barth (Emeritus), Ph.D.; M. C. Bell (Emeritus), Ph.D.; J. D. Quigley, Ph.D., Virginia Polytechnic Institute; L. D. Richardson, Dean, Agr. Exp. Sta., Ph.D., Ohio State; J. M. Grizzle, Ph.D., Florida; K. H. Hollingsworth, Ph.D., Illinois; M. H. Sims, Ph.D., Auburn; R. L. Tugwell (Emeritus), Ph.D., Kansas State.

Associate Professors:
W. R. Backus, Ph.D., Tennessee; B. R. Bell, Ph.D., North Carolina State; H. Elzer, D.V.M., Illinois; R. N. Helmken, Ph.D., Marine; S. H. Heng, Ph.D., Iowa; R. W. L. Johnson, Ph.D., Veterinary; F. B. Masekun, Ph.D., Kansas State; J. D. J. O'Connor, Ph.D., Oregon State.

Instructors:
M. O. Smith, Ph.D., North Carolina State; F. N. Schrick, Ph.D., Clemson.

ASSISTANT PROFESSORS:
J. M. Grizzle, Ph.D., Florida; K. Hollingsworth-Jenkins, Ph.D., Nebraska; J. D. Quigley, Ph.D., Virginia Polytechnic Institute; L. D. Richardson, Dean, Agr. Exp. Sta., Ph.D., Ohio State; J. M. Grizzle, Ph.D., Florida; K. H. Hollingsworth-Jenkins, Mathew, Schrick, and Smalling.

Through course selection, students may meet University requirements as History.

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 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 electives.

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

May be chosen from approved list of courses meeting University requirements as Humanities.
Courses must be taken at UT Knoxville.

Veterinary curriculum must have been taken at UT Knoxville.

Technical agriculture

Electives should be chosen with career objectives in mind and in consultation with the advisor. The animal science core courses are 220, 260, 330, 340, and 380.

PRE-VETERINARY MEDICINE PROGRAM

The PRE-VETERINARY MEDICINE 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) - 8 hours
   b. Humanities and Social Sciences - 18 hours
   c. Calculus A-B, 121-122 or Calculus I-II, 141-142 or Biostatistics I-II, 151-152 (3.3) - 8 hours
   d. Elements of Physics 212-222 (4.4) - 8 hours
   e. General Chemistry 130-130 (4.4) - 8 hours
   f. Organic Chemistry 350-360 and Laboratory 350 (3.3) - 9 hours
   g. College Algebra/Pre-Calculus/Pre-Calculus (4.4) - 4 hours
   h. General Psychology 150-150 (4-4) - 8 hours
   i. General Science 202 - 4 hours
   j. Cell Biology 210 - 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 agriculture courses must be taken at UT Knoxville.

4. In addition to all the required pre-veterinary medical courses, the following (or approved electives) 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 - 4 hours
   e. Animal Science 330 - 4 hours
   f. Animal Science 340 - 3 hours
   g. Animal Science 360 - 3 hours
   h. Animal Science 410, 420 - 3 hours
   i. Animal Science 430 - 3 hours
   j. Animal Science 440, 450 - 3 hours
   k. Computer Science Elective - 3 hours
   l. Computer Science Elective - 3 hours
   m. Computer Science Elective - 3 hours
   n. Computer Science Elective - 3 hours
   o. Computer Science Elective - 3 hours
   p. Speech 210 or 240 - 3 hours

5. MAT 103-105 hours

Chosen from approved list of courses meeting University requirements as Humanities.

"Chosen from approved list of courses meeting University requirements as Humanities.

"Chosen from approved list of courses meeting University requirements as Humanities.

"Chosen from approved list of courses meeting University requirements as Humanities.

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. degree 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 SCIENCE AND TECHNOLOGY

C.J. Breake (Head); Ph.D. Wisconsin; J.L. Collins, Ph.D. Maryland; P.D. Draughon, Ph.D. Georgia; H.D. Jaynes (Emeritus), Ph.D. Illinois; S.L. Melton, Ph.D. Tennessee; J.T. Miks (Emeritus), Ph.D. Wisconsin; W.C. Overcast (Emeritus), Ph.D. Iowa State; M.F. Pentef, Ph.D. Pennsylvania.

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

Assistant Professor:
D.A. Guldain, Ph.D. Georgia.

Advisors:
Collins, Draughon, Loveday, Melton, Mount, and Penefield.

The major in food technology and science prepares students to apply the sciences and engineering technology to manufacture, prepare, alter, 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 delve 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 a professional career in positions in the food industry such as food microbiologist, food chemist, quality evaluation and control supervisor, plant management, ingredient specialist, etc. 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 Science and Technology requires a minimum of 17 hours as follows: 145, 316, 320-329, 340 and one elective course in Food Science and Technology.

FOOD SCIENCE AND TECHNOLOGY

Ph.D. Wisconsin; J.L. Collins, Ph.D. Maryland; P.D. Draughon, Ph.D. Georgia; H.D. Jaynes (Emeritus), Ph.D. Illinois; S.L. Melton, Ph.D. Tennessee; J.T. Miks (Emeritus), Ph.D. Wisconsin; W.C. Overcast (Emeritus), Ph.D. Iowa State; M.F. Pentef, Ph.D. Pennsylvania.

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

Assistant Professor:
D.A. Guldain, Ph.D. Georgia.

Advisors:
Collins, Draughon, Loveday, Melton, Mount, and Penefield.

This major in food technology and science prepares students to apply the sciences and engineering technology to manufacture, pre-
Wildlife and Fisheries Science Majors: two courses in English composition (English 101 or English 120 equivalent); calculus and calculus (Math 119 or 125 or equivalent); general chemistry (Chemistry 100 or equivalent); two courses in general botany (Botany 110 or 120 or equivalent); general economics (Economics 201 or equivalent); public speaking (Speech 210 or 240 or equivalent); and statistics (Statistics 201 or equivalent).

Wildlife and Fisheries Majors: two courses in English composition (English 101 or 102 equivalent); college algebra and calculus (Math 119 or 125 or equivalent); two courses in chemistry (Chemistry 100 and 110 or equivalent); two courses in general biology (Biology 110 or 120 or equivalent); general economics (Economics 201 or equivalent); public speaking (Speech 210 or 240 or equivalent) and statistics (Statistics 201 or equivalent). Students must have completed all but 3 core courses by the end of the semester in which they apply for admission to the upper division courses. They must complete all core courses before attending upper division courses. They will also need the prerequisites to the individual upper division courses.

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, and environmental amenities. Foresters are managers of these resources. Thus, our principal instructional objectives is to provide the broad education needed to deal effectively with the complex of forest resources.

A minor in Forest Resources consists of 18 hours as follows: FWF 211 or FWF 250, FWF 311, 312, 313, 317, FWF 316, 410, 416 and FWF 395 and Forestry designated courses.

The mission of the Department of Forestry, Wildlife, and Fisheries is to advance the management and utilization of natural resources in the region, and beyond through programs in teaching, research, and extension. 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 Science.

Wildlife and Fisheries Management Concentration includes local, state, and national parks, and other wood- using industries cooperatives in conducting tours and demonstrating industrial processes.

Benefits are derived from the multiple resources of the forest: wood, water, wildlife, recreation, and environmental amenities. Foresters are managers of these resources. Thus, our principal instructional objectives is to provide the broad education needed to deal effectively with the complex of forest resources.

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Wildlife and Fisheries Office.

List of appropriate courses in Humanities and Social Sciences:

- Philosophy
- History Elective
- Humanities Elective
- Sociology
- Political Science
- Economics
- Psychology
- English
- Journalism
- Foreign Language
- Music
- Theatre
- Art
- Dance
- Film
- Philosophy
- Visual Arts
- Film Theory
- Film Production

Students will choose one course from Philosophy or History Elective or Humanities Elective.

Preparations for the internship should be made well in advance of actual placement. Summer employment or volunteer work in a related field prior to the internship is highly encouraged.

Specific coursework in the department focuses on wood properties, soil and wood processing, wood composites and gluing, and management of forest products and industries. Students learn about the use of leisure time and the relationship of natural resources to the constructive use of leisure time.

Eligible credits may be used to obtain specializations in complementary areas such as education, cultural and natural history interpretation, forestry, wildlife, fisheries, communication and public relations, agricultural extension education, ornamental horticulture and landscape design, business and public administration, and the natural sciences, including zoology, botany, zoology, and geology as well as recreation and leisure studies, such as private/commercial and therapeutic recreation.

Ten weeks of professional internship experience (3 credits) is required during the final 45 hours of credit in the program. The internship is a highly structured field experience guided by specific learning objectives pre-approved by the instructor and the field supervisor. The student receives one credit per two weeks of full-time field experience. Preparations for the internship should be made well in advance of actual placement. summer employment or volunteer work in a related field prior to the internship is highly encouraged.

Specific coursework in the department focuses on wood properties, soil and wood processing, wood composites and gluing, and management of forest products and industries. Students learn about the use of leisure time and the relationship of natural resources to the constructive use of leisure time.

Eligible credits may be used to obtain specializations in complementary areas such as education, cultural and natural history interpretation, forestry, wildlife, fisheries, communication and public relations, agricultural extension education, ornamental horticulture and landscape design, business and public administration, and the natural sciences, including zoology, botany, zoology, and geology as well as recreation and leisure studies, such as private/commercial and therapeutic recreation.

Ten weeks of professional internship experience (3 credits) is required during the final 45 hours of credit in the program. The internship is a highly structured field experience guided by specific learning objectives pre-approved by the instructor and the field supervisor. The student receives one credit per two weeks of full-time field experience. Preparations for the internship should be made well in advance of actual placement. summer employment or volunteer work in a related field prior to the internship is highly encouraged.

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landscape design, plant cultivation, and retail garden center management. A minor in turfgrass management, landscape construction and contracting, provides students interested in landscape design or horticulture a pathway to jobs in retail nurseries, landscape design, and garden centers.

The OHLD curriculum is organized into three different concentrations: technology, business, and sciences. Each concentration offers a different academic approach to address business and science. Each concentration includes coursework in turfgrass management, basic landscape plants, greenhouse management, and plant pathology.

FLORICULTURE
Floriculture is the field of growing, marketing, and designing with flowers and plants. Students interested in careers in floriculture will find coursework in flower and plant identification, plant propagation, postharvest physiology, plant pathology, and interior plant maintenance. Students interested in floriculture careers may choose to minor in business administration.

TURFGRASS MANAGEMENT
Turfgrass management students receive comprehensive training in the science of growing and managing turfgrasses for golf courses, parks, athletic fields, residential lawns, and commercial areas. Students interested in turfgrass management careers may choose to minor in business administration.

LANDSCAPE DESIGN
Landscape design students create aesthetic concepts and practical plans for improved outdoor living. Students learn about the science of landscape architecture, horticulture, and construction practices. Students receive comprehensive training in landscape design and contracting.

GARDEN CENTER AND RETAIL NURSERY MANAGEMENT
Students study retail business management principles, retail marketing, and mark-up methods. This concentration is designed for students interested in careers in retail nurseries, landscape design, and garden centers.

OTHER SPECIALTY AREAS
Other OHLD vocational areas are: landscape architecture, arboriculture and arboricultural technology, ornamental horticulture, greenhouse production, turfgrass science, postharvest physiology, plant pathology, and greenhouse engineering.

Wholesale nursery production is the production of trees, shrubs, and other ornamental plants used in residential and commercial landscaping and garden center retail sales. Marketing is usually on a regional or national scale. Students learn crop production and marketing with an emphasis in sales and business management practices. Students study basic landscape plants, greenhouse production and management, plant propagation, tourism management, landscape contracting, nursery management and production, plant pathology, economic entomology, soil and plant nutrition, and plant biology.

Whole sale nursery production requires knowledge of the production of trees, shrubs, and other ornamental plants used in residential and commercial landscaping and garden center retail sales. Marketing is usually on a regional or national scale. Students learn crop production and marketing with an emphasis in sales and business management practices. Students study basic landscape plants, greenhouse production and management, plant propagation, tourism management, landscape contracting, nursery management and production, plant pathology, economic entomology, soil and plant nutrition, and plant biology.

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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 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, 225, 350, 370, 380, 410, 440, 450, 460, 480, 485, 486, 487, Prerequisites, if any, to these courses will not be waived, but must be included in addition to the total of 18 hours.

TECHNOLOGY CONCENTRATION

Hours Credit
Freshman

Agriculture 110 .......................... 3

Agriculture 101 3

Botany 110, 120 8

Chemistry 100 8

English 101,102 6

Mathematics 112, 123 6

Sophomore

Select 2 from CHLD 200, 230, or 250 6

Select 1 from Entomology, Ag Eng Tech 201, 202 or, Interior Design 201 3

Select Botany 200, Forestry Wildlife and Plant Pathology 201, and Plant and Soil Science 200 4

Economics 101 3

Plant and Soil Science 210 3

Plant and Soil Science 211 3

Speech 210 or 240 3

Social Science Elective 3

Unrestricted Elective 3

Junior

Select 4 from CHLD 310, 320, 330, 340, 350, 360, 370, or 380 10-12

Math 112 3

Chemistry 102 8

Unrestricted Elective 3

Writing or Speech Elective 3

Senior

Select 4 from CHLD 410, 440, 450, 451, 453, 460, 485, or 490 10-11

CHLD 460 3

Select 1 from Entomology, Ag Eng Tech 432, 433, or 487 3

Select 1 from Botany 305, 321, or 332 3-4

Humanities Elective 3

Humanities Elective 3

Unrestricted electives 12-13

Total:132 hours

Business Concentration

Private consultants, supervisors, salespersons, appraisers, advisors, farm managers and in international agriculture. Students selecting the 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, 211, 236, 451 and 471 plus 3 courses from Group A and 3 courses from Group B. Of the 6 courses chosen from

PLANT AND SOIL SCIENCE

Professors:

F.L. Allen (Hass), Ph.D. Minnesota; F.F. Bell (Emertiu), Ph.D. Iowa State; D.L. Coffey, Ph.D. Purdue; B.V. Conger (D), Ph.D. Weslaco; J.H. Devine, Ph.D. Texas; J.E. Foas, Ph.D. Minnesota; H.A. Friburg, Ph.D. Iowa State; R.M. Hayes, Ph.D. Illinois; R.H. McElroy, PhD. M.D. Mullen, Ph.D. North Carolina State, J.H. Reynolds.

Advisors:

Allen, Coffey, Foss, Lessman, Mullen, Reynolds, and B.L. Allen, Coffey, Foss, Lessman, Mullen, Reynolds, and Reynolds.

Plant and soil science deals with field and vegetable crops and soil resources. Plant science involves crop ecology and physiology, crop breeding and genetics for crop improvement, introduction of new varieties, crop management for efficient production, control of pest, and weeds. Soil science involves fertility, soil 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 the major must complete the basic curriculum for the College of Agriculture and fulfill the major group requirements. A minor may be selected from any of the related disciplines. Required courses for a major in Plant and Soil Science are 210, 211, 236, 451 and 471 plus 3 courses from Group A and 3 courses from Group B. Of the 6 courses chosen from

BIOLOGY AND ENVIRONMENTAL SCIENCE

Professors:

F.L. Allen (Hass), Ph.D. Minnesota; F.F. Bell (Emertiu), Ph.D. Iowa State; D.L. Coffey, Ph.D. Purdue; B.V. Conger (D), Ph.D. Weslaco; J.H. Devine, Ph.D. Texas; J.E. Foas, Ph.D. Minnesota; H.A. Friburg, Ph.D. Iowa State; R.M. Hayes, Ph.D. Illinois; R.H. McElroy, PhD. M.D. Mullen, Ph.D. North Carolina State, J.H. Reynolds.
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. The program is designed to train students to address environmental problems such as 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 concerned citizens, and in governmental 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.

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

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