The Arthur Temple College of Forestry and Agriculture


ARTHUR TEMPLE
COLLEGE OF FORESTRY

College of
Forestry and Agriculture

R. Scott Beasley, Dean
Forestry 103
Phone (936) 468-3301
Fax: (936) 468-2489
E-mail: atcof@sfasu.edu
www.sfasu.edu/forestry

Forestry

Mission

The mission of the Arthur Temple College of Forestry and Agriculture is to maintain excellence in teaching, research, and outreach; to enhance the health and vitality of the environment through sustainable management, conservation, and protection of our forests and natural resources; and to enhance the production and economic viability of agricultural commodities. The mission consists of the following objectives:

- The College of Forestry and Agriculture is dedicated to comprehensive undergraduate and graduate education, basic and applied research programs, and service.
- In the educational program, students receive classroom and field-based experiences to prepare them for their professional careers. Academic courses provide learning opportunities which encourage and inspire students to approach forest resource, environmental, agricultural, and social issues in a critical yet creative manner, to identify and analyze key elements, and to articulate ethical solutions.
- The college has a strong commitment to a research program that encourages basic and applied studies in natural resource management, environmental topics, agricultural production, and social values. Although research projects are centered predominantly in East Texas, the issues addressed and results obtained often have national and international implications.
- To complete the college's mission, a service program provides professional expertise, information, and training. Practicing professionals, industrial landowners, non-industrial landowners, public agencies, farmers, ranchers, poultry producers, and society in general are beneficiaries of these services.

The forestry, environmental science and agriculture complex contains classrooms, laboratories, student computer rooms, greenhouses, a center for livestock production and geographic infomration systems (GIS) laboratories. The Piney Woods Conservation Center, an off-campus facility located on Sam Rayburn Reservoir, provides an ideal setting for field-based studies. Excellence within the ATCOFA is reflected in a variety of other research centers and institutes, including the Center for Applied Studies in Forestry, the Columbia Geospatial Service Center, the Medicinal Plants Center, the Poultry Science Center, the Forest

Resources Institute, the East Texas Native Plants Center and the Institute for White-tailed Deer Management and Research.

The campus is situated near the Stephen F. Austin Experimental Forest, the East Texas Plant Materials Center, five wilderness areas that are part of four national forests and several million acres of private commercial forests. The university also is situated in the heart of the nursery/landscape, beef cattle and poultry industries of East Texas. Forestry, environmental science and agriculture classes take advantage of these resources for hands-on education and research opportunities. Forestry, environmental science and agriculture programs benefit from cooperative efforts with industry and producers.

Michael S. Fountain, Associate Dean

Faculty

Regents Professors
James C. Kroll, David L. Kulhavy, Michael H. Legg

Endowed Chairs
T.L.L. Temple Chair in Forestry, Jimmie L. Yeiser

Endowed Distinguished Professorships
Arnold Distinguished Professor, Kenneth W. Farrish;
Laurence C. Walker Distinguished Professor, Michael S. Fountain;
Joe C. Denman Distinguished Professor, James C. Kroll;
Bone Hill Foundation Professor, Gary D. Kronrad;
Robert E. "Judge" Minton Distinguished Professor, Michael H. Legg;
Kenneth Nelson Distinguished Professor, Hans M. Williams

Professors
Darrel L. McDonald, Brian P. Oswald

Associate Professors
Dean W. Coble, Daniel R. Unger

Assistant Professors
Theresa G. Coble, Christopher E. Comer, Warren C. Conway, I-Kuai Hung, Matthew W. McBroom, David R. Ownby, Daniel G. Scognamillo, Pat Stephens Williams

Research Professor
Shiyou Li

Instructor
Frank B. Shockley

Research Scientist
Zhi Zhen Zhang

Accreditation

The forestry undergraduate degree programs offered by the Arthur Temple College of Forestry and Agriculture are accredited by the Society of American Foresters.

Advising and Student Services

All students in the environmental science and forestry degree programs with 60 hours or less must consult an academic adviser prior to each registration period. Students in this category will automatically have an advising hold that can only be cleared by the adviser following an advising session. Students with 61 hours or more must meet with an academic adviser at least once per academic year; however, it is recommended that every student, regardless of completed semester hours, consult with an adviser prior to each registration period to ensure satisfactory progress on his or her degree program.

Scholarships

The ATCOFA annually awards numerous scholarships totaling more than $80,000. These are available to undergraduate (including incoming freshmen) and graduate students and are awarded based on academic excellence and/or financial need. Scholarship applications are due by February 1 and are available online on the Office of Student Financial Assistance Web site. Information about other sources of financial aid, including work study and loans, is available from the Office of Student Financial Assistance..

Student Organizations

Professional and special interest student organizations sponsored by the ATCOFA provide opportunities for students to participate in the programs of the college, develop leadership skills, compete in national contests and network with practicing professionals. Official student organizations include the Society of American Foresters (SAF), The Wildlife Society (TWS), Xi Sigma Pi National Forestry Honor Society, Student Society of Arboriculture (SSA), Sylvans Professional Forestry Student's Club, National Association of Interpretation (NAI), Graduate Student Association, Ducks Unlimited, and Student Chapter of the Association of Fire Ecology (SAFE).

Areas of Study & Undergraduate Degree Programs

Bachelor of Science in Forestry (B.S.F.) with majors in:

forest management, forest recreation management, forest wildlife management,
forestry (Individually tailored programs under this broad category include: urban forestry, fire management, spatial science, forest soils, agroforestry, and forest business management)

A Bachelor of Science in Forestry (B.S.F.) degree in forestry requires 140 semester credit hours of course work. Undergraduate forestry degree programs require completion of:

1. A general education core designed to provide broad education in the arts, mathematics, and social and natural sciences:

ENG 131	Composition: Rhetoric & Argument	(3)
ENG 132	Composition and Rhetoric:	

	Critical & Analytical	(3)
BIO 131	Introductory Botany	(4)
CHE 133	General Chemistry I	(4)
ECO 232	Principles of Microeconomics	(3)
HIS 133 & 134	U.S. History	(6)
MTH 143	Finite Math or MTH 138 College Algebra	(3)
MTH 220	Statistics or MTH 144 Elements of Calculus	(3)
PSC 141 & 142	Introduction to American Government	(6)
Humanities:	ART, MUS, THR, or DAN*	(3)
Humanities:	Literature*	(3)
Six hours communication skills*		(6-8)
	Total	47-49

**See University Core Curriculum Requirements.*

2. A forestry core designed to provide broad exposure to all areas of forest resources management:

FOR 111	Introduction to Forestry	(3)
FOR 151	Introduction to Outdoor Recreation	(3)
FOR 152	Introduction to Wildlife Management	(3)
FOR 205	Forest Biometrics I	(3)
FOR 209	Forest Ecology	(3)
FOR 219	Dendrology	(3)
FOR 240	Wood Science	(3)
FOR 313	Forest Insects & Diseases	(3)
FOR 337	Introduction to Fire Management	(2)
FOR 347	Silviculture	(3)
FOR 348	Natural Resource Policy	(3)
FOR 349	Principles of Forest Soils	(3)
FOR 409	Forest Hydrology	(3)
FOR 435	Forest Economics	(3)
FOR 458	Forest Resource Management	(4)
GIS 224	Introduction to Spatial Science	(3)
GIS 390	GIS in Natural Resources	(3)
	Total:	51

3. A field station program designed to integrate previous course work with practical field experience:

FOR 310	Field Silviculture	(1)
FOR 323	Land Measurement	(1)
FOR 325	Timber Cruising	(1)
FOR 329	Harvesting & Processing	(1)
FOR 335	Non-Timber Resources Management	(2)
	Total:	6

4. A major designed to provide added expertise in a specialized field of forestry.
   A. Forest management major (FRMG): the emphasis is on production of wood,
   fiber and other forest resources:

FOR 223	Surveying & Mapping	(4)
FOR 317	Forest Biometrics II	(3)
FOR 411	Timber Management	(3)
FOR 427	Regional Silviculture	(3)

FOR 428	Intensive Silviculture	(3)
Nine hours. in the College of Business		(9)
Approved Electives#		(9)
Free Electives##		(0-2)
	Total:	34-36

B. Forest wildlife management major (FRWM): For students especially interested in management of wildlife resources as part of the forest:

BIO 133	Introductory Zoology	(4)
BIO 341	Geneticsor BIO 370 Evolution	(3-4)
BIO 433	Ornithology	(4)
BIO 436	Mammalogy	(4)
FOR 255	Forest Wildlife Management	(3)
FOR 305	Wildlife Techniques	(3)
FOR 450	Wildlife Habitat Management	(3)
Approved Electives#		(6)
Free Electives##		(3-5)
	Total:	34-36

C. Forest recreation management major (FRCM): For students especially interested in park management and utilizing the forest ecosystem for educational purposes:

HMS 202	Travel & Tourism	(3)
FOR 255	Forest Wildlife Management	(3)
FOR 351	Wildland Recreation Administration	(3)
FOR 405	Environmental Communication & Interpretation	(3)
FOR 451	Management of Outdoor Recreation Areas	(3)
FOR 452	Environmental Interpretation Methods	(3)
FOR 457	Environmental Attitudes & Issues	(3)
Approved Electives#		(9)
Free Electives##		(4-6)
	Total:	34-36

#Approved Electives: Adv. Level (300-400) courses selected with approval of Adviser.
##Free Electives: Courses selected from any discipline offered in the university. Adviser's recommendation is encouraged.

D. Forestry - Students in this tailored program complete the general education core and the forestry core (including field station) plus sufficient additional courses to equal 140 credit hours of acceptable credit. Individually tailored programs are available in urban forestry, fire management, forest business management, agroforestry and geospatial science.

These tailored programs are only available for qualified students with specific career objectives and are subject to approval by the associate dean.

Forestry Field Station

All students pursuing the B.S.F. degree are required to attend one session of the forestry field station that is held at the Piney Woods Conservation Center. During a session, students participate with faculty in an integrated sequence of five courses for a total of six semester credit hours. Students attend field station during the summer (six weeks) between their junior and senior years. The following courses are prerequisites for field station: FOR 111, FOR 151, FOR 152, FOR 205, FOR

209, FOR 219, FOR 240, FOR 347, FOR 349, and GIS 224. Students must have an overall grade point average of 2.0 at the end of the fall semester prior to attending field station.

Second Major/Minor in Forestry

A. A non-forestry student wishing to earn a second major in forestry must complete the forestry core and field station requirements.
B. A non-forestry student may earn a minor in any of the specialized fields of forestry by completing a minimum of 20 semester hours. At least six semester hours must be at the advanced (300-400) level. Advising for second majors or minors will be in the office of the associate dean or the student services coordinator of the college.

Graduate Degree Programs

The college offers a Master of Science (M.S.) degree that requires a minimum of 24 semester hours of graduate course work and six semester hours of thesis research and writing. The M.S. degree is designed for those who wish to further their education in any of the specializations within forest resources either for professional career development or future work toward a doctoral degree. Students with background deficiencies may be required to complete additional credits. A non-thesis Master of Forestry (M.F.) in forest business management also is offered (see SFA Graduate Bulletin for details on these programs).

A Doctor of Philosophy (Ph.D.) degree is offered. A minimum of 36 hours of graduate course work beyond the master's degree and a dissertation consisting of at least 30 hours are required. The Ph.D. is a research degree awarded in recognition of the student's ability to think and work independently as a scholar, and to contribute to society by conducting original research in a chosen field of natural resource management.

Graduate study in environmental science is available through the Division of Environmental Science at SFA.

Certified Forester

Students who receive a B.S.F. from SFA fulfill the academic requirements for the Certified Forester (CF) credential from the Society of American Foresters. Certification status is not available until the applicant has a minimum of five years of qualifying professional forestry- related experience and has passed the certification examination.

Certified Wildlife Biologist

Credentialing as a professional certified wildlife biologist by The Wildlife Society is a voluntary program for students in forest wildlife management. It is the responsibility of the student, working closely with his/her adviser, to take the appropriate courses required by The Wildlife Society. Certification status is not available until the applicant has the required course work and a minimum of five years of work experience in wildlife management.

Probation – Suspension Policy

A student receiving a probation or suspension notice must see the associate dean or the student services coordinator for advising.

Degree Plan and Final Graduation Plan

Prior to the end of the sophomore year, all students in the college must select a degree program and prepare a degree plan. To have a degree plan prepared, the student should see the associate dean or the student services coordinator of the college.

A final graduation plan must be filed prior to pre-registration for the semester in which the student plans to graduate. The student should see the associate dean or the student services coordinator for review and for filing of the final graduation plan.

Courses in Forestry (FOR)

All courses are offered both fall and spring semesters unless a specific semester is indicated. A course not regularly scheduled may be offered on demand. Except for courses numbered 460 and 463, all undergraduate courses must have a minimum of 10 students to be offered. Courses with required field trips will have an additional fee.

111. Introduction to Forestry (FORE 1301) – Three semester hours, two hours lecture and three hours lab per week. Introduction to the multiple use concept of forestry and basic techniques of forest resource management. Required field trips. Course fee required.

151. Introduction to Outdoor Recreation – Three semester hours, two hours lecture and three hours lab per week. Survey of federal and state policies, commercial and private landowner outlooks, and development in outdoor recreation. Course fee required.

152. Introduction to Wildlife Management – Three semester hours, two hours lecture and three hours lab per week. Historical perspectives of wildlife management and an introduction to basic wildlife management concepts. Course fee required.

205. Forest Biometrics I – Three semester hours, two hours lecture and three hours lab per week. Individual tree measurements, forest sampling methods, applied statistics, and computer applications for data analysis. Required field trips. Prerequisite: MTH 138 or 143. Course fee required.

209. Forest Ecology (FORE 2309) – Three semester hours, two hours lecture and three hours lab per week. Climatic, edaphic, and biotic factors and their relation to woody plant growth and development. Required field trips. Prerequisite: BIO 131. Course fee required.

219. Dendrology (FORE 1314) – Three semester hours, two hours lecture and three hours lab per week. Identification, distribution and silvical characteristics of angiosperms and gymnosperms. Required field trips. Prerequisite: BIO 131. Course fee required.

223. Surveying and Mapping – Four semester hours, three hours lecture and three hours lab per week. Introduction to principles and methods

of land surveying and associated map production techniques. Prerequisite: MTH 138 or 143. Course fee required. Spring only.

240. Wood Science – Three semester hours, two hours lecture and three hours lab per week. Physical and chemical properties of wood as related to its anatomy and economic use. Prerequisites: MTH 138 or 143, BIO 131, CHE 133.

241. Wood Properties – Three semester hours, two hours lecture and three hours lab per week. Non-mechanical and mechanical properties of wood and their relation to timber grading, processing and manufacture of forest products and their end use. Prerequisite: FOR 240. Course fee required.

255. Forest Wildlife Management – Three semester hours, two hours lecture and three hours lab per week. Principles and techniques of wildlife management. Required field trips. Prerequisite: FOR 152. Course fee required.

304. Arboriculture – Three semester hours, two hours lecture and three hours lab per week. Establishment and care of individual trees in a non-forest context.

305. Wildlife Techniques – Three semester hours, two hours lecture and three hours lab per week. Instruction and practice in a variety of field methods used to conduct and evaluate resource management and research. Assumptions, biases and problems associated with various techniques, as well as analysis of data, interpretations, and application of results. Prerequisites: FOR 152. Course fee required.

310. Field Silviculture – One semester hour. Study of regeneration techniques, thinning and intermediate cultural operations. Required field trips. Prerequisite: All forestry core courses through 300 level. Course fee required. Summer only at forestry field station.

312. Tree Growth and Wood Quality Relations – Three semester hours, three hours lecture per week. Introduction to the variability of wood structure and properties. Assessment of information regarding genetic, silvicultural and environmental factors influencing tre development and wood properties as related to end use. Prerequisite: FOR 240.

313. Forest Insects and Diseases – Three semester hours, two hours lecture and three hours lab per week. Examination of the effects of forest pests on forest products, forest stand structure and function, and both economic and non-economic losses. Prerequisite: FOR 209. Course fee required.

317. Forest Biometrics II – Three semester hours, three hours lecture per week. Quantifying forest timber stand structure with respect to basic stand parameters. Prerequisite: FOR 205. Fall only.

323. Land Measurement – One semester hour. Study of boundary surveying of forestland. Required field trips. Prerequisite: All forestry core courses through 300 level. Course fee required. Summer only at forestry field station.

325. Timber Cruising – One semester hour. Study of timber stand estimation. Required field trips. Prerequisite: All forestry core courses through 300 level. Course fee required. Summer only at forestry field station.

329. Harvesting and Processing – One semester hour. Study of methods

of harvesting materials from the forest and procedures used in the manufacture of wood products. Required field trips. Prerequisite: All forestry core courses through 300 level. Course fee required. Summer only at forestry field station.

335. Non-timber Resources Management – Two semester hours. Study of inventory and management principles for non-timber uses of forestland. Required field trips. Prerequisite: All forestry core courses through 300 level. Course fee required. Summer only at forestry field station.

337. Introduction to Fire Management – Two semester hours, two hours lecture per week. Explore fire history in the U.S., fire occurrence, effects and behavior, detection, and control. Study the integration of fire in land management planning and policy. Prerequisite: FOR 209 or permission of instructor. Course fee required.

344. Forest Entomology – Three semester hours, two hours lecture and three hours lab per week. Study of insects that attack forest trees and products. Required field trips. Prerequisite: FOR 209 or eight hours of BIO. Course fee required.

347. Silviculture – Three semester hours, two hours lecture and three hours lab per week. Study of silvicultural systems, regeneration and intermediate management from ecologic and economic viewpoints. Required field trips. Prerequisites: FOR 205, FOR 209. Course fee required.

348. Natural Resource Policy – Three semester hours, three hours lecture per week. Forest history and natural resource policy in the United States including effects of the environmental movement. Spring only.

349. Principles of Forest Soils – Three semester hours, two hours lecture and three hours lab per week. Physical, chemical and biological properties of forest soils. Management and classification of soils. Required field trips. Prerequisite: CHE 133. Course fee required.

351. Introduction to Wildland Recreation Administration – Three semester hours, three hours lecture per week. Structure, staffing and financing of parks, wildernesses, and other forest recreation areas. Spring only.

402. Field Ecology – Three semester hours, two hours lecture and three hours lab per week. Principles of synecology and population ecology as they affect vegetative and animal communities. Ecological impacts of management, quantitative analysis of communities. Prerequisites: FOR 209 or BIO 313. Course fee required. Fall only.

404. Urban Forestry – Three semester hours, two hours lecture and three hours lab per week. Planning, establishment, protection, and management of individual trees and forest systems within an urban environment. Required field trips. Prerequisites: FOR 209, 349. Course fee required.

405. Environmental Communication and Interpretation – Three semester hours, three hours lecture per week. Overview of the field of natural resource communication and interpretation. Of particular interest to those whose careers require public interaction. Fall only.

409. Forest Hydrology – Three semester hours, two hours lecture and three hours lab per week. Study of the effects of forests and forest

activities on water quantity and quality, soil erosion and stream sedimentation. Required field trips. Prerequisite: FOR 349. Course fee required.

411. Timber Management – Three semester hours, two hours lecture per week. Concepts of stand-level and forest-level timber harvesting schedules. Prerequisite: FOR 317.

427. Regional Silviculture – Three semester hours, three hours lecture per week. Multiple use management of the major forest types of the U. S. Prerequisite: FOR 310. Fall only.

428. Intensive Silviculture – Three semester hours, two hours lecture and three hours lab per week. Study of tree improvement in silviculture context. Fundamental concepts of tree breeding, vegetation management and forest fertilization. Prerequisite: FOR 310. Course fee required. Spring only.

435. Forest Economics – Three semester hours, three hours lecture per week. Economic analysis for decision making in forestry. Prerequisites: ECO 232, FOR 310. Summer II and fall.

438. Fire Use in Land Management – Three semester hours, two hours lecture and three hours lab per week. Study of fire in land management. Preparation of burning plans and field applications of prescribed burns. Required field trips. Prerequisite: FOR 337 or permission of instructor. Course fee required. Spring only.

448. Range Management – Three semester hours, three hours lecture per week. Principles of range management. Characteristics of rangelands and range plants, management of grazing animals, and vegetation. Emphasis on interactions with recreation, wildlife and forests. Spring only.

450. Forest Wildlife Habitat Management – Three semester hours, two hours lecture and three hours lab per week. Theory and practice of evaluating and managing a forest habitat for wildlife. Required field trips. Prerequisite: FOR 305. Course fee required. Fall only.

451. Management of Outdoor Recreation Areas – Three semester hours, two hours lecture and three hours lab per week. Planning, development and maintenance of parks and forest recreation areas. Required field trips. Prerequisite: FOR 351. Course fee required. Fall only.

452. Environmental Interpretation Methods – Three semester hours, three hours lecture per week. Development of effective techniques for interpreting natural and cultural resources, and in planning and managing interpretive programs. Required field trips. Course fee required. Spring only.

454. Non-game Wildlife Ecology – Three semester hours, two hours lecture and three hours lab per week. Ecology of non-game animals in forest ecosystems. Topics include population ecology and the relationships of animals to forest ecosystems. Some bird and small mammal sample techniques included as is management of some endangered species. Required field trips. Prerequisite: FOR 255 or permission of instructor. Course fee required. Spring only.

457. Environmental Attitudes and Issues – Three semester hours, three hours lecture per week. Overview of the global historical origins and current influences on attitudes toward the outdoor environment.

Examination and discussion of environmental policy, ethics and issues. Spring only.

458. Forest Resource Management – Four semester hours, three hours lecture and three hours lab per week. Formulation, calculation, writing, and implementation of multiple-use resource management plans and environmental impact statements and assessments. Prerequisites: forestry field station and FOR 435. Course fee required.

460. Forestry Internship – Three semester hours. Studies of resource management in an operational setting under the supervision of an approved organization. Must be arranged in advance and approved by the dean's office. May be repeated for credit for a maximum of six credit hours.

463. Special Problems – One, two, or three semester hours. Individual study in an area of the student's choice. Must be arranged in advance and approved by the dean's office. May be repeated for credit for a maximum of nine credit hours.

464. Contemporary Problems in Forestry – Three semester hours. Classes conducted on current topics in forestry. Must be arranged in advance and approved by the dean's office. May be repeated for credit for a maximum of nine credit hours.

465. Range Development and Evaluation – Three semester hours, three hours of lecture per week. Principles of the development, improvement, and evaluation of rangeland resources. Required field trips. Course fee required. Spring only, odd years.

466. Urban Wildlife Management – Three semester hours, three hours lecture per week. Techniques of managing wildlife population in urban/suburban landscapes. Includes nuisance wildlife and habitat restoration. Spring only, odd years.

Courses in Geographic Information Systems (GIS)

201. Introduction to Geographic Information Systems – Three semester hours, two hours lecture and three hours lab per week. Overview of computer-based GIS concepts and components. Topics include spatial (location) and attributes (description of features), base maps, spatial data manipulation and analysis. Course designed for non-forestry/ environmental science majors who want a broad overview of GIS. Course fee required.

224. Introduction to Spatial Science – Three semester hours, two ours lecture and three hours lab per week. An introduction to the spatial disciplines of aerial photography, satellite remote sensing, global positioning systems and geographic information systems as applied to mapping, monitoring and managing natural resources. Prerequisite: MTH 138, 143 or 233. Course fee required.

301. GIS Applications – Three semester hours, two hours lecture and three hours lab per week. Advanced overview of GIS applications. Develop GIS topics such as geodata-base construction, thematic map analysis, spatial modeling, data classification and verification and GIS application design. Prerequisite: GIS 201. Course fee required.

390. Geographic Information Systems – Three semester hours, two hours lecture and three hours lab per week. Specific approaches to applications of geographic information systems (GIS), global positioning systems, (GPS) and remote sensing to problems in natural resource analysis. Prerequisite: GIS 224. Course fee required.

Division of Environmental Science

Kenneth W. Farrish, Director
108 Forestry Laboratory
(936) 468-2475
Fax: (936) 468-2489
kfarrish@sfasu.edu
www.fp.sfasu.edu/environmental

Interdisciplinary Faculty

Professors
Kenneth W. Farrish, Volker W. Gobel, David L. Kulhavy, Ernest B. Ledger Jr, Brian P. Oswald, Hans M. Williams, J. Leon Young

Associate Professors
Chris A. Barker, Dean W. Coble, Alex S. Frantzen, Florence Elliott-Howard, Alexander Y. Karatayev, Daniel R. Unger, James E. Van Kley, Stephen C. Wagner

Assistant Professors
Christopher Comer, I-Kuai Hung, Matthew W. McBroom, David R. Ownby, Daniel G. Scognamillo

Areas of Study & Degrees
B.S. Environmental Science
Tracks:
- Land and Water Resources
- Environmental Planning and Management

Objectives
The Division of Environmental Science is a collaborative unit of the Arthur Temple College of Forestry and Agriculture and the College of Sciences and Mathematics. The objectives of the Division of Environmental Science are:

(1) To provide superior education programs in environmental science that produce graduates capable of understanding and addressing the complex environmental problems facing modern society.
(2) To conduct research directed at developing understanding of and finding solutions to environmental problems, particularly those of rural locations.
(3) To provide outreach and service in environmental science.

Student Organizations

The primary student organization for environmental science students is the National Association of Environmental Professionals (NAEP). The NAEP chapter provides students with opportunities to develop leadership skills, network with practicing professionals and engage in social activities.

Definition of the Major

The Bachelor of Science degree program in environmental science requires 130 semester credit hours of course work. The degree program requires completion of:

1. The University General Education Core designed to provide broad education in the arts, mathematics, and social and natural sciences.

ENG 131	Composition: Rhetoric & Argument	(3)
ENG 132	Composition and Rhetoric: Critical & Analytical	(3)
CHE 133	General Chemistry I	(4)
CHE 134	General Chemistry II	(4)
ECO 232	Principles of Microeconomics	(3)
HIS 133 & 134	U.S. History	(6)
MTH 138 & 220	College Algebra/Statistics	
-or-		
MTH 143 & 144	Finite Math/ Elements of Calculus	(6)
PSC 141 & 142	Introduction to American Government	(6)
Humanities:	ART, MUS, THR, DAN*	(3)
Humanities:	Literature*	(3)
	Communications*	(6-8)
	Total:	47-49

**See University Core Curriculum Requirements*

2. The environmental science core is designed to provide additional basic science foundation and applied environmental science knowledge and skills.

BIO 131	Introductory Botany	(4)
BIO 133	Introductory Zoology	(4)
BIO 313	General Ecology (or ENV 209 Forest Ecology)	(3)
BLW 478	Environmental Regulatory Law	(3)
CHE 330	Fundamentals of Organic Chemistry	(4)
ECO 361	Environmental Economics	(3)
ENV 110	Introduction to Environmental Science	(4)
ENV 210	Environmental Measurements	(3)
ENV 349	Environmental Soil Science	(3)
ENV 402	Wetland Delineation & Function	(3)
ENV 412	Environmental Hydrology	(3)
ENV 415	Environmental Assessment & Management	(4)
ENV 420	Landscape Ecology & Planning	(3)
ENV 470	Senior Seminar	(1)
FOR 457	Environmental Attitudes & Issues (or ENV 348 Natural Resources Policy)	(3)
GIS 224	Introduction to Spatial Science	(3)
GIS 390	GIS in Natural Resources	(3)
	Total:	54

3. Student must complete one of two environmental science tracks:

Land and Water Resources

BIO 309	Microbiology	(4)
BIO 450	Limnology	(4)
CHE 231	Quantitative Analysis	(4)
CHE 429	Environmental Chemistry	(4)
GOL 131	Introductory Geology	(4)
PLS 420	Agricultural Waste Management	(3)
Approved Electives #		(3)
Free Electives ##		(1-3)

Environmental Planning and Management**

GEO 130	Physical Geography	(3)
GEO 310	Spatial Economic Behavior	(3)
MGT 370	Management Principles	(3)
MGT 373	Human Resource Management	(3)
Approved Electives #		(12)
Free Electives ##		(3-5)

Total semester hours required for degree = 130

***Requires the student to complete a minor or second major in biology, business, chemistry, communications, forestry, geography, or geology. Student must use approved electives to complete the selected minor.*
 # Approved Electives: Adv. Level (300-400) courses selected with approval of adviser.
Free Electives: Courses selected from any discipline offered in the university. Adviser's recommendation is encouraged.

Second Major or Minor in Environmental Science

A second major in environmental science requires completion of the entire environmental science core. A minor in environmental science requires completion of ENV 110 plus 15 additional semester hours of environmental science (ENV) courses. At least six semester hours must be at the advanced (300-400) level.

Graduate Degree Programs

The Division of Environmental Science offers the Master of Science (M.S.) degree in environmental science. The 36 semester hour curriculum is a collaborative program with the University of Texas Health Center at Tyler. Students select from two tracks of study. The occupational and environmental health track focuses on environmental concerns related to human health. The land and water resources track focuses on protection and management of natural ecosystems.

Degree Plan and Final Graduation Plan

Prior to the end of the sophomore year, students must select a degree program and prepare a degree plan. The student should see the director of the division or the student services coordinator in the ATCOFA for assistance in preparation of the degree plan. A final degree plan must be filed prior to pre-registration for the semester in which graduation is expected.

Course Information

Courses are offered in the semesters indicated. Except for courses numbered 460 and 463, all undergraduate courses must have a minimum of 10 students to be taught.

Courses in Environmental Science (ENV)

110. Introduction to Environmental Science (ENVR 1401) – Four semester hours, three hours lecture and three hours lab per week. Introduction to the multidisciplinary study of the environment using the scientific method. Course fee required.

209. Forest Ecology – (FORE 2309) - Three semester hours, two hours lecture and three hours lab per week. Climatic, edaphic and biotic factors and their relationship to woody plant growth and development. Required field trips. Prerequisite: BIO 131. Course fee required.

210. Environmental Measurements – Three semester hours, two hours lecture and three hours lab per week. Introduction to sampling and measuring biological, chemical, and physical parameters of atmospheric, aquatic, and terrestrial systems. Prerequisite ENV 110. Course fee required.

348. Natural Resource Policy – Three semester hours, three hours lecture per week. Forest history and natural resource policy in the United States including effects of the environmental movement. Spring only.

349. Environmental Soil Science – Three semester hours, two hours lecture and three hours lab per week. Physical, chemical and biological properties of soils. Role of soils in environmental quality, biogeochemical cycles and management concerns. Prerequisite: CHE 134. Course fee required. Fall only.

402. Wetland Delineation and Function – Three semester hours, two hours lecture and three hours lab per week. Introduction to the history, regulations and current technical criteria for the identification and delineation of wetland boundaries and the functional assessment of wetlands. Prerequisite: ENV 349. Course fee required. Spring only, odd years.

403. Remediation and Reclamation of Disturbed Land – Three semester hours, two hours lecture and three hours lab per week. Remediation and reclamation of contaminated or disturbed lands. Required field trips including two all day trips. Prerequisite: ENV/FOR 349, AGN 331 or permission of instructor. Course fee required. Spring only, odd years.

405. Environmental Communication and Interpretation – Three semester hours, three hours lecture per week. Overview of the field of natural resource communication and interpretation. Of particular interest to those whose careers require public interaction. Fall only.

412. Environmental Hydrology – Three semester hours, two hours lecture and three hours lab per week. Study of the physical environment of agricultural and forested land, fundamental physics, biological significance, instruments, and monitoring techniques. Required field trips. Prerequisite: ENV 349. Course fee required. Fall only.

415. Environmental Assessment and Management – Four semester

hours, three hours lecture and three hours lab per week. Environmental planning in the U. S. with reference to the principles and procedures for preparing environmental assessments and impact statements. Prerequisite: Senior standing or permission of instructor. Course fee required. Fall only.

420. Landscape Ecology and Planning– Three semester hours, two hours lecture and three hours lab per week. Structure, function and change within ecosystems measured on a landscape scale. Evaluation of current management techniques for their effects on landscapes. Required field trips. Prerequisites: GIS 224 or AGM 325, BIO 313 or FOR/ENV 209. Course fee required. Spring only.

460. Internship in Environmental Science – Three semester hours. Studies of environmental science in an operational setting under the supervision of a cooperating organization. Must be arranged in advance and approved by the dean's office. May be repeated for credit for a maximum of nine credit hours.

463. Special Problems in Environmental Science – One, two or three semester hours. Individual study in an area of the student's choice. Must be arranged in advance and approved by the dean's office. May be repeated for credit for a maximum of nine credit hours.

464. Contemporary Problems in Environmental Science – Three semester hours. Classes conducted on current topics in environmental science. May be repeated for credit for a maximum of nine credit hours.

470. Senior Seminar – Prerequisite: Fifteen credit hours in environmental science or permission of instructor. A participatory seminar where students condense, review and present research findings on focused topics. Subject matter varies by semester. May be repeated once for credit. Spring only.

Courses in Geographic Information Systems (GIS)

224. Introduction to Spatial Science – Three semester hours, two hours lecture and three hours lab per week. An introduction to the spatial analysis disciplines of aerial photography, satellite remote sensing, global positioning systems and geographic information systems as applied to mapping, monitoring, and managing natural resources. Prerequisite: MTH 138, 143 or 233. Course fee required.

390. Geographic Information Systems – Three semester hours, two hours lecture and three hours lab per week. Specific approaches to applications of geographic information systems (GIS), global positioning systems (GPS), and remote sensing to problems in natural resource analysis. Prerequisite: ENV/FOR 224. Course fee required.

Department of Agriculture

R. Dale Perritt, Chair
Agriculture 101
(936) 468-3705
Fax: (936) 468-4047
dperritt@sfasu.edu
http://sfasu.edu/ag

Faculty

Professors
Tim Cherry, David L. Creech, Joe E. Gotti, J. Leon Young

Associate Professor
Leland C. Thompson

Assistant Professors
Erin G. Brown, Michael Maurer, Craig Morton

Lecturer
Emily Payne

Areas of Study & Degrees

B.S. Agriculture
Majors:
- Agricultural Business
- Agricultural Development
- Agricultural Machinery
- Agronomy
- Agronomy - Turfgrass Emphasis
- Animal Science
- Animal Science—Equine Emphasis
- Animal Science—Pre-Vet
- Horticulture
- Poultry Science

Objectives

The Department of Agriculture seeks to provide a dynamic, intellectual community primarily for the purpose of fostering academic learning and professional growth for its students. A focus on effective teaching, research and service provides opportunities to:

- Develop critical thinking skills needed to compete in the diverse industry of agriculture
- Develop effective communication skills
- Collaborate effectively within educational, cultural, economic and

professional environments in order to disseminate new and existing knowledge to agriculture's stakeholders.

Modern facilities such as the SFA Mast Arboretum, Pineywoods Native Plant Center, Ruby Mize Azalea Garden, Walter Todd Agricultural Research Center, Swine Laboratory, Poultry Research Center and Feed Mill, Broiler Research Center, Forage Bull and Beef Heifer Development Center, Equine Laboratory, Agricultural Mechanics Laboratory, and SFA Soil, Plant, Water and Forage Analysis Laboratory provide opportunities for hands-on instruction.

Definition of Majors

Agribusiness

The area of agribusiness involves the manufacture and distribution of agricultural supplies; production operations on the farm; and the storage, processing and distribution of farm commodities. The study of agribusiness focuses on integrating technical knowledge with economic theory for decision making about the use of scarce productive resources to produce food and fiber and distribute them to society.

Agricultural Development

Agricultural development is a course of study designed to prepare the student for a career in teaching, extension or with agricultural service agencies whose purpose is to disseminate information related to the industry of agriculture. Special emphasis will be placed on communication skills and effective teaching strategies.

Agricultural Machinery

Agricultural machinery is a course of study designed to prepare the student for a career in the management of agricultural systems including the design and marketing of agricultural machinery, agricultural structures and agricultural environments.

Agronomy

Agronomy is the study of soil and crop science. Crop science is related primarily to the genetics, breeding, physiology and management of field and turf crops. Soil science is heavily oriented toward soil physics, soil chemistry, soil origin, soil microbiology, soil mineralogy, soil fertility and soil management as they apply to the growth of plants and to the environment.

Animal Science

The field of animal science provides exciting and challenging opportunities for graduates desiring to pursue careers in animal production, animal health or health services, feed formulation and manufacturing, processing/further processing, and the marketing of animals and animal products. Specialty areas include beef cattle science, poultry science, swine production, equine science and pre-veterinary medicine.

Horticulture

Horticulture is the science, business and art of growing and marketing fruits, vegetables, flowers and ornamental plants. Horticulture includes site planning and preparation, seed and vegetative propagation, plant growth and development, harvest, distribution, marketing, utilization and human issues associated with a wide diversity of crops for nutrition, beauty and utility.

Poultry Science

Poultry science is a course of study designed to prepare individuals seeking a challenging career in the poultry industry. The curriculum includes all aspects of live production, waste management, computer technology, nutrition and product processing. Upon completion of the course requirements, a student will be prepared for entry-level management positions within the industry.

Definition of Minors

Students desiring a minor in any of the above majors are required to complete 18 to 21 hours in agriculture with at least 12 hours having the course prefix of the minor area. Six hours must be advanced.

Course Requirements for Majors

1. Core Curriculum Requirements (44-46 hours)
   - A. Communication (12-14 hours)
     - (1) English Rhetoric/Composition (six hours)
       Six hours from ENG 131, 132 or ENG 133 or 235
     - (2) Communication Skills (six to eight hours)
       BCM 247, COM 111, 170 or FRE 131, 132, ILA 111, 112, SPA 131, 132, ENG 273
   - B. Mathematics (three hours)
     MTH 110, 133, 138, 139, 143, 144, 220, 233, 234
   - C. Natural Sciences (eight hours)
     CHE 111, 112, 133, 134
   - D. Humanities & Visual and Performing Arts (six hours)
     - (1) Visual and Performing Arts
       Three hours from ART 280, 281, 282 or MUS 140, 160, THR 161, 370 or DAN 140, 341
     - (2) Other/Literature/Philosophy
       Three hours from ENG 200 - 235, 300; PHIL 153, 223, HIS 151,152
   - E. Social and Behavioral Sciences (15 hours)
     - (1) U.S. History (six hours)
       HIS 133, 134, 335
     - (2) Political Science (six hours)
       PSC 141, 142
     - (3) Social/Behavioral Science (three hours)
       ANT 231; ECO 231, 232; GEO 131, 132; PSY 133; SOC 137, 139
2. Major course requirements are listed under course requirements for each major. Twenty-one must be advanced with 12 advanced being completed at Stephen F. Austin State University.
3. An academic minor of at least 18 hours with at least six advanced with three of the advanced completed at SFA.
4. Enough additional hours to total 130. This total shall include a minimum of 42 hours of residence credit of which36 must be advanced.
5. Students must meet minimum standards related to student success initiatives mandated in legislation. Maintenance of a C average in course work completed at SFA and course work completed at SFA in the major and minor fields considered separately.

Agronomy

University General Education Core		(44-46 hrs)
Additional Courses required for major:		(11-12 hrs)
BIO 131, and 7 to 8 hrs from BIO 309, 353, 404 or 424. BUS or other science may be substituted for adv BIO with adviser permission.		
Agriculture Core (24 hours)		
AGR 100	The Agriculture Industry	(1)
AGM 120	Fundamentals of Agricultural Tech.	(4)
ANS 131	Introductory Animal Science	(3)
AEC 261	Agricultural Economics	(3)
AEC 451	Farm Management	(3)
AGD 400	Senior Seminar	(1)
Select 3 hrs from:		(3)
AGD 361	Agricultural Development	
AGD 371	Agriculture Leadership	
Select 3 hours from:		(3)
HRT 210	Ornamental Horticulture	
HRT 212	Fruit and Vegetable Production	
HRT 239	Basic Landscape Design	
Select 3 hours of advanced (300 or 400 level) courses from : AGM, ANS, PLS (3)		
Agronomy Major (22 hrs)		
AGN-HRT 110	Crop Science	(3)
AGN 331	Soil Science	(4)
Select 15 hours from:		(15)
AGN 262	Forages	
AGN 367	Weed Science	
AGN 445	Plant Breeding	
AGN 448	Range Management	
AGN 469	Plant Protection	
HRT 215	Turfgrass Management I	
HRT 419	Turfgrass Management II	
PLS 420	Agricultural Waste Management	
AGM 421	Principles of Irrigation	
Agriculture Electives		(8-9)
Select 8/9 hours from AGD, ANS, HRT, AGR, AGN, AGM, AEC, PLS		
Free Elective		(0/3)
Minor		(18)
GRAND TOTAL		(130/131)

Agronomy/Horticulture with Turfgrass Emphasis

University General Education Core		(44-46 hrs)
Additional Courses required:		(12 hrs)
BIO 131	Principles of Botany	
BIO 353	Economic Entomology	
BIO 424	Plant Pathology	

Agriculture Core		
AGR 100	The Agriculture Industry	(1)
AGM 120	Fundamentals of Agricultural Tech.	(4)
AGN-HRT 110	Crop Science	(3)
AEC 261	Agricultural Economics	(3)
AGN 331	Soil Science	(4)
AGD 400	Senior Seminar	(1)
AEC 451	Farm Management	(3)
Select 3 hrs from:		(3)
AGD 361	Agricultural Development	
AGD 371	Agriculture Leadership	
Select 3 hours from:		(3)
HRT 213	Annuals and Perennials	
HRT 416	Plant Propagation	
Select 3 hours from:		(3)
AGN 310	Internal Combustion Engine	
AGN 315	Agricultural Electrification	
AGN 410	Agricultural Mach. Operation and Performance	

Agronomy Major (Turfgrass Emphases)		
AGN 367	Weed Science	(3)
AGN 469	Plant Protection	(3)
AGN 434	Soil Fertility	(3)
AGM 421	Principles of Irrigation	(3)
HRT 215	Turfgrass Management I	(3)
HRT 419	Turfgrass Manaagement II	(3)
HRT 324	Landscape Plant Material I	(3)
FOR 304	Arborculture	(3)
Agriculture Electives:		(3-6)
Select 3 to 6 hours from: AGD, ANS, HRT, AGR, AGN, AGM, AEC, PLS		
Minor		(18)
GRAND TOTAL		(130/131)

Agribusiness

University General Education Core		(44-46)
Additional Courses required for the major		(10-11)
MTH 220 and BIO 131 or 133		
and BIO 309 or 353. BUS or		
other science may be substituted for adv BIO with adviser permission		
Agriculture Core (25 hrs)		
AGR 100	The Agriculture Industry	(1)
AGN/HRT 110	Crop Science	(3)
AGM 120	Fundamentals of Agricultural Tech.	(4)
ANS 131	Introductory Animal Science	(3)
AGN331	Soil Science	(4)
ANS 333	Animal Nutrition	(3)

AGD 400	Senior Seminar	(1)
Select 3 hours from:		(3)
AGD 361	Agriculture Development	
AGD 371	Agriculture Leadership	
Select 3 hours from:		(3)
PLS 317	Applied Agriculture Data Applications	
AGM 410	Ag. Machinery Operation and Performance	

Agribusiness Major (15 hrs)

AEC 261	Agricultural Economics	(3)
AEC 344	Agricultural Finance	(3)
AEC 349	Marketing of Agricultural Products	(3)
AEC 442	Natural Resource Economics	(3)
AEC 451	Farm Management	(3)
Ag. Electives		(12)

select 12 hours from AGD, ANS, HRT, AGR, AGN, AGM, AEC, PLS

Required Minor in General Business (18hrs)

BLW 335	Business Law	(3)
Select 3 hours from:		(3)
ACC 101	Small Business Accounting	
ACC 231	Principles of Financial Accounting	
Select 3 hours from:		(3)
ECO 231	Principles of Macroeconomics	
ECO 232	Principles of Microeconomics	
ECO 311	Managerial Economics	
ECO 331	Money and Banking	
ECO 480	International Economics	
ACC 232	Principles of Management Accounting	
Select 9 hours advanced from College of Business		(9)
(No more than 6 hours in one prefix)		
Elective (varies 6 to 9 hrs)		(6/9)

GRAND TOTAL (130/131)

Agricultural Machinery

University General Education Core (44-46)

Additional Courses required for the major (8 hrs)

BIO 131 or 133 or PHY 101 or PHY elective

Agriculture Core (28 hrs)

AGR 100	The Agriculture Industry	(1)
AGN-HRT 110	Crop Science	(3)
AGM 120	Fundamentals of Agricultural Tech.	(4)
AEC 261	Agricultural Economics	(3)
PLS 317	Applied Agriculture Data Applica.	(3)
AGN 331	Soil Science	(4)
AGD 400	Senior Seminar	(1)
AGD 451	Farm Management	(3)

Select 3 hours from:		(3)
AGN 262	Forages	
AGN 367	Weed Science	
AGN 445	Plant Breeding	
HRT 215	Turfgrass Management I	
Select 3 hrs from:		(3)
AGD 361	Agricultural Development	
AGD 371	Agriculture Leadership	

Agricultural Machinery Major (27 hrs)

AGM 236	Welding and Materials	(3)
AGM 310	Internal Combustion Engines	(3)
AGM-HRT 325	Design Application Software I (CAD)	(3)
AGM 383	Machinery Design and Structure	(3)
AGM 410	Machinery Operation and Perform.	(3)
PLS 420	Agricultural Waste Management	(3)
AGM 421	Principles of Irrigation	(3)
AGM 425	Mobile Hydraulics in Agriculture	(3)

Select 3 hrs from:		(3)
AGM 315	Agricultural Electrification	
AGM 326	Design Application Software II (CAD)	
Agriculture Electives		(6)
Select 6 hours from AGD, ANS, HRT, AGR, AGN, AGM, AEC, PLS		
Minor		(18)
	GRAND TOTAL	(131)

Animal Science

University General Education Core		(44-46)
Additional Courses required for major :		(7/8)
BIO 133, and 4 hrs from BIO 309, 341 or 353 or other Bus or science may substitute for Adv Bio with adviser permission		
Agriculture Core (28 hrs)		
AGR 100	The Agriculture Industry	(1)
AGN-HRT 110	Crop Science	(3)
AGM 120	Fundamentals of Agricultural Technology	(4)
AEC 261	Agricultural Economics	(3)
AGN 331	Soil Science	(4)
AGD 400	Senior Seminar	(1)
AEC 451	Farm Management	(3)
Select 3 hours from:		(3)
AGD 361	Agricultural Development	
AGD 371	Agriculture Leadership	
Select 3 hours from:		(3)
AGN 262	Forages	
AGN 367	Weed Science	
AGN 448	Range Management	

Select 3 hours from:		(3)
AGM 410	Ag. Machinery Operation & Performance	
PLS 420	Agricultural Waste Management	
PLS 465	Agriculture Products Processing	
Animal Science Major (21 hrs)		
ANS 131	Introductory Animal Science	(3)
ANS 333	Animal Nutrition	(3)
Select 3 hours from:		(3)
ANS 428	Animal Reproductive Physiology	
ANS 441	Principles of Animal Breeding	
Select 12 hours from:		(12)
ANS 201	Basic Horsemanship	
PLS 237	Introductory Poultry Science	
ANS 241	Horse Production	
ANS 242	Equitation	
ANS 243	Beef Cattle Science	
ANS 250	Artificial Insemination	
ANS 301	Livestock Evaluation	
PLS 340	Advanced Poultry Science	
ANS 343	Dairy Science	
PLS 437	Applied Poultry Production	
PLS 440	Non-Ruminant Nutrition and Feeding	
ANS 442	Equine Production and Management	
ANS 444	Feedstuffs, Feeding and Formulation	
Agriculture Electives		(9)
Select 9 hours from AGD, ANS, HRT, AGR, AGN, AGM, AEC, PLS		
Minor		(18)
Elective		(0/3)
	GRAND TOTAL	(130/131)

Students majoring in animal science desiring an emphasis in equine science may complete the following sequence of courses.

Animal Science With Equine Emphasis

University General Education Core		(44-46)
Additional Courses Required		(7/8)
BIO 133 and 4 hrs from BIO 309, 341, or 353 or bus or science may sub for adv BIO with adviser permission		
Agriculture Core (25 hrs)		
AGR 100	The Agriculture Industry	(1)
AGN-HRT 110	Crop Science	(3)
AGM 120	Fundamentals of Agricultural Tech.	(4)
AEC 261	Agricultural Economics	(3)
AGN 331	Soil Science	(4)

AGD 400	Senior Seminar	(1)
AEC 451	Farm Management	(3)
Select 3 hours from:		(3)
AGD 361	Agricultural Development	
AGD 371	Agriculture Leadership	
Select 3 hours from:		(3)
AGM 410	Ag. Machinery Operation & Performance	
PLS 420	Agricultural Waste Management	
PLS 465	Agriculture Products Processing	
AEC 344	Agricultural Finance	

Animal Science Major: (Equine Emphasis (27 hours)

ANS 131	Introductory Animal Science	(3)
ANS 333	Animal Nutrition	(3)
Select 3 hours from:		(3)
ANS 428	Animal Reproductive Physiology	
ANS 441	Principles of Animal Breeding	
Equine Emphasis: select 18 hours from:		(18)
ANS 201	Basic Horsemanship	
ANS 241	Horse Production	
ANS 242	Equitation	
ANS 351	Training Performance Horses-Western	
ANS 352	Training Performance Horses-English	
PLS 440	Non-Ruminant Nutrition and Feeding	
ANS 442	Equine Production and Management	
ANS 452	Equine Law Studies	
Agriculture Electives		(9-12)
Select 9-12 hours from AGD, ANS, HRT, AGN, AGM, AEC, PLS		
Minor		(18)
	Grand Total	(130-131)

Animal Science Pre-vet

Students wishing to major in animal science and meet the requirements for admission to schools of veterinary medicine must include the following courses in their general education requirements, minors or electives.

CHE 133, 134, 331, 332, 452;
BIO 133, 309, 341;
MTH 144;
PHY 133, 132

The Animal Science Major will consist of:

AGN/HRT 110, AGM 120, ANS 131, AEC 261, AGN 331, ANS 333, AEC 451, ANS 428, ANS 441, plus 15 additional hours selected from ANS or PLS.

Horticulture

University General Education Core	(44-46)
Additional Courses required for major	(7/8)

BIO 133, and 4 hrs from BIO 309, 341 or 353 or other bio or science may substitute for adv bio with adviser permission

Agriculture Core (25 hours)

AGR 100	The Agriculture Industry	(1)

AGN-HRT 110	Crop Science	(3)
AGM 120	Fundamentals of Agricultural Tech.	(4)
AEC 261	Agricultural Economics	(3)
AGN 331	Soil Science	(4)
AGD 400	Senior Seminar	(1)
AEC 451	Farm Management	(3)
Select 3 hours from:		(3)
AGD 361	Agricultural Development	
AGD 371	Agriculture Leadership	
Select 3 hours from:		(3)
AGM 421	Principles of Irrigation	
PLS 465	Agriculture Products Processing	
AGN 469	Plant Protection	
Select 3 hours from:		(3)
AGN 367	Weed Science	
AGN 445	Plant Breeding	
Horticulture Major (27 hours)		
HRT 210	Ornamental Horticulture	(3)
HRT 212	Fruit and Vegetable Production	(3)
HRT 239	Basic Landscape Design	(3)
Select 15 hours from:		(15)
HRT 213	Annuals and Perennials	
HRT 215	Turfgrass Management I	
HRT 321	Greenhouse Management	
HRT 322	Floriculture	
HRT 324	Landscape Plant Materials I	
HRT/AGM 325	Design Application Software I (CAD)	
HRT/AGM 326	Design Application Software II (CAD)	
HRT 413	Nursery Management	
HRT 416	Plant Propagation	
HRT 417	Advanced Landscape Design	
HRT 419	Turfgrass Management II	
Agriculture Electives		(6)
select 6 hours from AGD, ANS, HRT, AGR, AGN, AGM, AEC, PLS		
Minor		(18)
Electives		(2/3)
	GRAND TOTAL	(130/131)

Poultry Science

University General Education Core		(44-46)
Additional Courses required for major		(10-12)
4 hours from BIO 121, 123 or 133		
6-8 hours from ACC 101(3), BIO 309 (4), BIO 341 (4)		
ECO 231 (3), ECO 232 (3), GBU 147 (3)		
Agriculture Core (28 hours)		
AGR 100	The Agriculture Industry	(1)
ANS 131	Introductory Animal Science	(3)
AGN-HRT 110	Crop Science	(3)
AGM 120	Fundamentals of Agricultural Tech.	(4)
AEC 261	Agricultural Economics	(3)

AGN 331	Soil Science	(4)
AGD 400	Senior Seminar	(1)
AEC 451	Farm Management	(3)
Select 3 hours from:		(3)
AGD 361	Agricultural Development	
AGD 371	Agriculture Leadership	
Select 3 hours from:		(3)
AGN 262	Forages	
AGN 367	Weed Science	
AGN 448	Range Management	
Poultry Science Major (27 hours)		
PLS 237	Introductory Poultry Science	(3)
PLS 252	Poultry Selection and Evaluation	(3)
PLS 317	Applied Agriculture Data Applica.	(3)
ANS 333	Animal Nutrition	(3)
PLS 340	Advanced Poultry Science	(3)
PLS 347	Applied Broiler Production	(3)
Select 6 hours from:		(6)
PLS 465	Agriculture Products Processing	
PLS 420	Agriculture Waste Management	
PLS 337	Broiler Production	
ANS 444	Feedstuffs, Feeding and Formulation	
Agriculture Electives		
select 6 hours from AGD, ANS, HRT, AGR, AGN, AGM, AEC, PLS		
Minor		(18)
Electives		(2/3)
	GRAND TOTAL	(130/131)

Agricultural Development

Refer to the teacher certification requirements in this bulletin for teaching options. Additional requirements for the degree include: BIO 131 or 133 and BIO 353 or 309 or other science approved by adviser (8 hrs.).

Agricultural development majors in the non-teaching option will complete the agriculture-production core and one of the following:

1. Select an 18-hour minor or
2. Complete 20 hours as follows: BCM 447, BCM 450, AGD481, AGR 431(4) and AGR 432(4).
   Plus 3 advanced hours from AGD, AGM, AEC, ANS, PLS, HRT, AGN.

Agricultural Internship

The internship program in agriculture may be used by qualified majors in agriculture. It is designed to strengthen the major and provide a stronger base of

employment. The internship consists of spending one regular semester in a full-time, on-the-job, prescribed training program in an agricultural or related business. Twelve hours credit may be earned for a 15- to 16-week internship in the regular semester and eight hours credit for a 10- to 11-week internship during the summer. A one-summer term internship will be awarded four credit hours. Applicants for this program should initiate inquiry with the adviser regarding their eligibility no later than the beginning of their first junior semester. Application should be made at least one semester prior to internship. The internship may be used for agriculture electives but not for major courses.

Course Credit

All courses listed are three semester hours credit, three hours lecture per week unless otherwise noted. In courses with both lecture and laboratory, students must take both concurrently, and the same grade will be assigned in both.

Courses in Agriculture

Agribusiness and Economics (AEC)

261. Agricultural Economics (AGRI 2317) – Production economics, agricultural prices, money, banking, credit, land economics and public finance. Prerequisite: Six semester hours of agriculture.

344. Agricultural Finance – Analysis of capital requirements for farming and ranching; determination of credit needs; lending sources and requirements; risks, costs and legal aspects of credit.

349. Marketing of Agricultural Products – Marketing system as it applies to the farmer, and methods of reducing costs and of improving efficiency of agricultural marketing. Farmer's cooperatives emphasized.

442. Natural Resource Economics – Economic, institutional and physical factors involved in the utilization and control of natural resources as they are related to agriculture.

451. Farm Management – Two hours lecture, two hours lab per week. Application of business principles to farming, organization and management of farms, farm records and farm accounts. Prerequisite: Twelve semester hours of agriculture.

Agricultural Development (AGD)

361. Agricultural Development – Study of the structure and function of agricultural delivery systems and their impact on the industry of agriculture. Specific emphasis on the development of agricultural policy, agricultural research, market development, agricultural service agencies, ethics in agriculture and the adoption and diffusion of new technology. Laboratory field experience required. Prerequisite: Twelve hours of agriculture.

371. Agriculture Leadership – Study of the various leadership functions and management styles necessary to work effectively within the professional industry of agriculture. Specific emphasis on oral communication, parliamentary procedure and the function of youth

organizations and adult volunteer groups as support organizations in the agricultural community. Prerequisite: Twelve hours of agriculture.

400. Senior Seminar – One hour lecture. Provides the student with information needed for transition from the college environment to a professional career in the industry of agriculture. Specifically addresses current trends shaping career opportunities, resume development, interviewing skills, intern opportunities, research and development activities, professional organizations, personal investing and retirement planning, community development and service opportunities, and critical issues facing agriculture.

481. Methods of Teaching Agricultural Sciences in the Secondary School – Instructional methods and techniques that emphasize practical applications of the teaching-learning process. Special emphasis on reading in the content area, student evaluation, classroom management and discipline, and essential curriculum/programmatic elements unique to agricultural science and technology. Prerequisite: Nine hours professional education.

491. Student Teaching – Nine semester hours. Class observation, development of lesson plans, and methods of teaching in-school, and adult classes. Prerequisites: AGD 361, 371 and 481.

Agricultural Machinery (AGM)

120. Fundamentals of Agricultural Technology – Four semester hours, three hours lecture, two hours lab per week. Introductory course to acquaint students with a wide range of basic concepts, principles, procedures and applications of engineering and machinery in agriculture. Emphasis on skill areas and fundamental principles of agricultural operations and application. Lab fee $5.

236. Welding and Metals – One hour lecture, four hours lab per week. Arc welding, oxyacetylene welding, hot and cold metal work, plumbing and sheet metal work. Lab fee $20.

310. Internal Combustion Engines – Two hours lecture, two hours lab per week. Study of the theory and operation of single- and multi-cylinder internal combustion engines. Emphasis directed toward the application, maintenance, diagnosis and repair of internal combustion engines used in agricultural environments. Lab fee $5.

315. Agricultural Electrification – Two hours lecture, two hours lab per week. Electricity master controls, lighting, heating; maintenance of electric motors, safety, and automated equipment. Lab fee $5.

325. Design Application Software I (CAD) – Two hours lecture, two hours lab per week. Introduction to the use of computer assisted design (CAD) software. Acquaints students with basic 2-D design principles, utilizing the latest CAD and architectural software in a computer lab setting. Prerequisites: CSC 121 or 101; AGM 120, or consent of instructor. Lab fee $10. (Same as HRT 325).

326. Design Application Software II (CAD) – Two hours lecture, two hours lab per week. Advanced course on the use of computer assisted design (CAD) software. Emphasis on three-dimensional drawing and customized design. Experience with latest architectural, mechanical

and landscape software. Prerequisites: AGM/HRT 325. Lab fee $10. (Same as HRT 326).

383. Agricultural Machinery Design and Structure – One hour lecture, four hours lab per week. Mechanical design and construction of equipment. Metal fabrication. Prerequisite: AGR 236. Lab fee $20.

410. Agricultural Machinery Operation and Performance – Two hours lecture, two hours lab per week. Study of the operation, performance and management of agricultural machinery. Prerequisite: AEC 261. Lab fee $5.

421. Principles of Irrigation – Designed to quantify the parameters necessary for the design, installation and operation of various types of irrigation systems. Emphasis on the fundamental principles of irrigation, water application systems and water distribution systems. Prerequisite: Junior standing.

425. Mobile Hydraulics in Agriculture – Two hours lecture, two hours lab per week. Basic principles of hydraulics, hydrodynamics and hydrostatics; diagnosis and testing; hydraulic valves; and the history of hydraulics. Prerequisite: six hours of agriculture. Lab fee $5.

Agronomy – Plant and Soil Science (AGN)

110. Crop Science – Two hours lecture, two hours lab per week. Basic principles of plant growth as they relate to the production of major horticulture and agronomic crops. Lab fee $5. (Same as HRT 110).

262. Forages – Study of annual and perennial forages including their management for hay and grazing. Includes characteristics, adaptability, establishment, maintenance, harvesting and quality of the forage.

331. Soil Science – Four semester hours, three hours lecture, two hours lab per week. Physical, biological and chemical properties, classification and fertilization of soil. Prerequisite: CHE 111 or 133. Lab fee $5.

367. Weed Science – Study of control of weedy plant species in row crops, pastures, fruit and vegetable crops, turf and around the home. Includes applicator calibration. Prerequisite: CHE 112.

445. Plant Breeding – Improvement of crops through hybridization and selection with special emphasis on methods of breeding self-pollinated, cross-pollinated and vegetatively propagated plants. Prerequisite: BIO 341 or consent of the instructor.

448. Range Management – Principles of range management. Characteristics of rangelands and range plants, management of grazing animals, and vegetation. Prerequisite: Junior standing (Same as FOR 448).

469. Plant Protection – Biological, chemical, cultural and physical control of insects, diseases and weeds, including the concepts of integrated pest management. Prerequisites: BIO 353 plus 12 hours of agriculture or biology.

Animal Science (ANS)

131. Introductory Animal Science (AGRI 1319) – Two hours lecture, two hours lab per week. Introductory course in the modern methods of producing, processing and marketing animals and animal products.

201. Basic Horsemanship – A beginning riding course that will address the fundamental techniques and principles of horsemanship. Students will ride horses each day, learning the basic athletic maneuvers of the equine under saddle. Students are expected to provide an appropriate saddle and blanket. Students will be required to wear an appropriate riding helmet at all times during the lab.

241. Horse Production – Two hours lecture, two hours lab per week. Survey of the western working and pleasure horse industry. Fundamentals of selection, nutrition, breeding, health and training pleasure horses.

242. Equitation – Six hours lab per week. In-depth study of the finer points of riding involving athletic maneuvers of the horse essential to all performance horse events. Case studies in the behavior, communication and psychology between rider and the modern performance horse. Techniques for evaluation of pleasure and performance horse competition. Corequisite or Prerequisite: ANS 201

243. Beef Cattle Science – Two hours lecture, two hours lab per week. Selection, breeding, feeding, management and health care of beef cattle.

250. Artificial Insemination – One hour lecture, four hours lab per week. Basic reproductive physiology as related to artificial insemination, techniques of insemination, semen handling, heat detection, heat synchronization and breeding records. Prerequisite: ANS 131 or permission of instructor.

301. Livestock Evaluation – Two hours lecture, two hours lab per week. Techniques of evaluation and selection of livestock for various agricultural uses. Subjective appraisal of breeding feeder and market swine, as well as beef cattle and sheep. Prerequisites: six hours of ANS including ANS 131.

333. Animal Nutrition – Nature, function and metabolism of nutrients in animal production. Prerequisites: AGR 131; CHE 112 or 134; and junior standing.

342. Swine Production – Two hours lecture, two hours lab per week. Production practices in the management of swine. Breeding, feeding and health care. Prerequisite: AGR 131.

343. Dairy Science – Introduction to the basic principles and modern practices of dairy production and dairy products technology. Latest advances in record keeping, selection, breeding, feeding, location, facilities and milk marketing. Prerequisite: ANS 131.

351. Training Performance Horses – Western - Riding and training the western performance horse to compete in western riding, roping, cutting, and working cow horse events.

352. Training Performance Horses – English - Riding and training the English performance horse to compete in hunt seat horsemanship, stadium jumping, cross country jumping and dressage events.

428. Animal Reproductive Physiology – Two hours lecture, two hours lab per week. Concepts and applications of reproduction in farm animals. Endocrinology, anatomy and physiology, spermatogenesis, oogenesis, fertilization, gestation, parturition and behavior are

studied with practical application toward increasing animal production. Prerequisites: ANS 131 and Junior standing.

441. Principles of Animal Breeding – Selection and systems of breeding livestock. Traits of economic importance. Genetic and statistical principles as they apply to farm animal selections. Prerequisites: BIO 320 or 341 and 12 semester hours of animal science or consent of instructor.

442. Equine Production and Management – Two hours lecture, one hour lab per week. Provides the senior-level student with the scientific application of biological and biotechnological principles of horse production and management. Emphasis on reproduction, nutrition, genetics, disease, health, and exercise physiology that is unique to the horse.

444. Feedstuffs, Feeding and Formulation – Two hours lecture, two hours lab per week. Feedstuffs, feed formulation, feed processing and livestock feeding. Prerequisite: ANS 333. Lab fee $5.

452. Equine Law Studies – The development of a basic understanding of the legal principles involved in common problems associated with horse ownership and horse production.

Poultry Science (PLS)

237. Introductory Poultry Science (AGRI 1327) – Two hours lecture, two hours lab per week. Introduction to the scope and the importance of the poultry industry. Introduction to the basics of poultry science and modern methods of producing, processing and marketing of poultry and poultry products. Lab fee $5.

252. Poultry Selection and Evaluation – Two hours lecture, two hours lab per week (three credit hours). Techniques of evaluation and selection of poultry and poultry products. Subjective evaluation of breeders, broilers, commercial layers and market products.

317. Applied Agriculture Data Applications – Two hours lecture, two hours lab per week. Introduction to the use of computerized applications that deal directly with agriculture and allied industries. Examples include feed mill operations, hatchery complexes, environmental control systems, office applications, as well as Internet Web design and its impact on the agriculture industry. Prerequisite: six hours of agriculture.

337. Broiler Production – Study of production practices for the commercial broiler production industry with specific in-depth study in broiler houses and equipment, grow-out phases and disease control for typical broiler operations..

340. Advanced Poultry Science – Two hours lecture, two hours lab per week. In-depth study of avian anatomy and physiology, incubation, poultry diseases and poultry genetics and breeding. Lab fee $5. Prerequisite: ANS 237.

420. Agricultural Waste Management – Principles of agricultural waste management, addressing animal and human waste as well as management and disposal of agricultural chemicals. Prerequisite: Junior standing.

437. Applied Poultry Production – Two hours lecture, two hours lab per week. Advanced study of poultry nutrition, organization and management of commercial poultry production and processing operations. Use of computers in designing, planning and managing a modern commercial poultry operation. Lab fee $5. Prerequisite: ANS 237.

440. Non-Ruminant Nutrition and Feeding – Focuses on nutrition and feeding of non-ruminant animals. Address the interactions between nutrition and carcass product quality, immunology and environments in monogastric animals.

465. Agriculture Products Processing – Study of the technological processes involved in the preparation, processing, and packaging of agricultural products, including: livestock, poultry, fish, fruits, nuts, vegetables and dairy. Study of consumer trends, governmental regulations and research efforts affecting agricultural products processing. May require an overnight field trip. Prerequisite: Junior standing.

Horticulture (HRT)

110. Crop Science – Two hours lecture, two hours lab per week. Basic principles of plant growth as they relate to the production of major horticultural and agronomic crops. Lab fee $5. (Same as AGN 110).

210. Ornamental Horticulture – Two hours lecture, two hours laboratory per week. An overview of the ornamental horticulture industry including landscaping, nursery management, retail sales, floriculture, and other types of enterprises. Emphasis is placed on the propagation, production, and use of bedding, tropical foliage and indoor plants. Lab fee $5.

212. Fruit and Vegetable Production – Two hours lecture, two hours lab per week. Factors influencing the successful growing, harvesting, storing and marketing of fruit and vegetable crops. Special focus on low-input farming systems, irrigation efficiency, pest management and alternative crops and technology. Lab fee $5.

213. Annuals and Perennials – Two hours lecture, two hours lab per week. Principles and practices of herbaceous landscape color plants including annuals, perennials, tropicals and bulbs. Emphasis will be placed on identification, production, use and maintenance of year-round bedding plants in East Texas.

215. Turfgrass Management I – Two hours lecture, two hours lab per week. Principles of turfgrass production and selection; establishment and maintenance of turfgrasses for residential and commercial landscape applications.

239. Basic Landscape Design – Two hours lecture, two hours lab per week. History and basic principles, formal and informal designs, community planning and zoning. Lab fee $5. Prerequisites: AGM 120 or some drawing experience.

247. Landscape Installation – Two hours lecture, two hours lab per week. Application of design principles including interpretation of plans, costs and bidding, site preparation, construction materials, planting and maintenance.

321. Greenhouse Management – Two hours lecture, two hours lab per week. Principles of greenhouse management. Prerequisite: HRT-AGN 110. Lab fee $5.

322. Floriculture – Two hours lecture, two hours lab per week. Principles and practical applications of commercial production of pot plants, cut flower crops, flower arrangements, post-harvest handling and marketing techniques. Lab fee $20.

324. Landscape Plant Materials I – One hour lecture, four hours lab. Emphasis on the plants most commonly used in East Texas landscapes. Requires the identification of 175 small trees, shrubs, vines, ground covers and herbaceous perennials. Prerequisites: six hours of agriculture or consent of instructor. Lab fee $5.

325. Design Application Software I (CAD) – Two hours lecture, two hours lab per week. Introduction to the use of computer assisted design (CAD) software. Acquaints students with basic 2-D design principles, utilizing the latest CAD and architectural software in a computer lab setting. Prerequisites: CSC 121 or 101; AGM 120, or consent of instructor. Lab fee $10. (Same as AGM 325).

326. Design Application Software II (CAD) – Two hours lecture, two hours lab per week. Advanced course on the use of computer assisted design (CAD) software. Emphasis on three-dimensional drawing and customized design. Experience with latest architectural, mechanical and landscape software. Lab fee $10. Prerequisite: AGM-HRT 325 or HMS 414. (Same as AGM 326).

413. Nursery Management – Two hours lecture, two hours lab per week. Study of the principles and practices involved in commercial production, marketing and management of nursery crops. Prerequisite: Six hours of agriculture or equivalent. Lab fee $5.

416. Plant Propagation – Two hours lecture, two hours lab per week. Physiological relationships involved in plant propagation-environmental factors as they relate to plant growth structures and nursery conditions. Prerequisite: six hours of agriculture or consent of instructor. Lab fees $5.

417. Advanced Landscape Design – Practical design applications for landscape situations using various plant materials, cost estimation, contracting, construction and maintenance. Prerequisites: HRT 239 and/or HRT-AGM 325. Lab fee $5.

419. Turfgrass Management II – Focuses on the skills needed by golf course, park, and athletic field managers to develop cost-effective management practices for facilities under intensive use. Emphasis is placed on site-specific needs including substrate modification, irrigation and drainage, fertilization, and pest management.

General Agriculture (AGR)

100. The Agriculture Industry (AGRI 1131) – One semester hour credit, one hour lecture per week. Introduction to agriculture and its relationship to the sciences. Also careers and opportunities in agriculture. Required for all agriculture majors.

275. Special Problems – One to four semester hours. Individual instruction in laboratory or field problems. May include enterprise projects. Prerequisites: Six hours of agriculture. May be repeated.

280. Special Topics – One to four semester hours. Study of specific areas of agriculture approved by the agriculture curriculum committee and by the department chair. May be repeated.

431. Agricultural Internship – Four semester hours, 40 hours per week for five weeks of work experience with industry in the use of equipment and materials of production in the intern's major field. Prerequisite: Twelve hours of agriculture.

432. Agricultural Internship II – Four semester hours, 40 hours per week for five weeks. Production practices basic to the intern's major field of interest. Prerequisite: Twelve hours of agriculture. Fall, spring.

433. Agricultural Internship III – Four semester hours, 40 hours per week for five weeks of applied management practices related to the intern's major field of interest. Prerequisite: Twelve hours of agriculture. Fall, spring.

475. Special Problems – One to four semester hours. Individual instruction in laboratory or field problems. Prerequisite: Twelve hours of agriculture. May be repeated.

480. Topics in Agriculture – One to four semester hours. Study of specific areas of agriculture approved by the agriculture curriculum committee and by the chair of the department. May be repeated.