Sustainable Agriculture and Food Systems - Horticulture Option : BS-SAFS-HORT

The Horticulture Option under the Bachelor of Science in Sustainable Agriculture and Food Systems prepares students for careers in residential and commercial landscape maintenance and installation, greenhouse and nursery production and management, vegetable and fruit production, and other careers in horticulture. The program emphasizes sustainable and environmentally-friendly techniques of plant production, utilization, and management.

Core Curriculum		
See the Core Curriculum Requirements (https://coursecatalog.tamuc.edu/undergrad/core-curriculum-requirements/)		42
Required Courses for Sustainable Agriculture and Food Systems		
AG 1131	Intro To Agriculture	1
AG 300	Professional Agricultural Communications	1
AG 352	Urban Agriculture	3
AG 392	Appld Ethics US World Ag	3
AG 400	Seminar	1
AG 405	Internship Agri-Industries [z]	6
AEC 2317	Agricultural Economics [*]	3
PLS 1307	Introduction to Plant Science & Agronomy [*, y]	3
or PLS 1315	Introduction to Horticulture	
PLS 2313	Economic Entomology	3
PLS 309	Soil Science	3
Required Courses for the Horticulture Option		
AMC 315	Agri Systms Technology Mgmt	3
PLS 1115	Introduction to Horticulture Laboratory	1
PLS 230	Sustainable Landscape Plant Identification	3
PLS 305	Sustainable Landscape Design	3
PLS 306	Plant Propagation	3
PLS 320	Soil Fert-Plant Nutrition	3
PLS 329	Soil Science Laboratory	1
PLS 430	Greenhouse Management	3
PLS 450	Landscape Management	3
PLS 455	Turfgrass Management	3
PLS electives		6
AG elective		3
Required Support Courses for the Horticulture Option		
BSC 1411	Botany [*]	4
CHEM 1305	Introductory Chemistry I [*]	3
or CHEM 1311	General and Quantitative Chemistry I	
MGT 305	Principles of Management	3
Required Minor		**18**
Total Hours		**120**

* Course counts towards the Core Curriculum Requirements.
z Students choosing the Horticulture option should register for 6 hours of AG 405.
y Students choosing the Horticulture option should take PLS 1315 Introduction to Horticulture.

AEC 2317 - Agricultural Economics
Hours: 3
(AGRI 2317) A study of economic principles, with emphasis on their application to the solution of farm, agribusiness, and agricultural industry problems.

AEC 297 - Special Topics
Hours: 1-4
Organized class. May be repeated when topics vary.

AEC 301 - Trends in the Food Industry
Hours: 1-3
Analysis of current trends in the food industry, including norms, specifications, and standards; trade issues; and policies with national and international scope that affect the U.S. food industry. The focus is on developing an understanding of the causes and consequences of such trends, the various issues involved, and how they affect stakeholders and society. Prerequisites: Junior standing.

AEC 302 - Computer Applications in Agriculture
Hours: 3
An introductory course to computer applications with specific emphasis on applications used in agricultural businesses. Content includes spreadsheet management, word processing, and presentation applications.

AEC 304 - Farm Accounting
Hours: 3
The course covers the application of accounting principles as they apply to the production and marketing of agricultural products to analyze the financial performance and condition of the farm business.

AEC 314 - Farm Management
Hours: 3
Farm Management. Three semester hours. Techniques and procedures used for decision making in the farm business. Determination of optimum enterprise choice, resource combination and techniques of financial management, budgeting, and whole farm/ranch planning.

AEC 316 - Agricultural Marketing
Hours: 3
Agricultural Marketing. Three semester hours. A broad view of marketing; food markets and consumption; marketing functions and institutions. Applications of economic theory to agricultural price estimation, discovery, and determination.

AEC 324 - Farm Management Lab
Hours: 1
Students will be exposed to hands-on farm management problem-solving techniques using technology.

AEC 327 - Agricultural Sales
Hours: 3
This course introduces students to sales and principles of selling techniques for agricultural products and services, real estate, financial, and other industrial and institutional products and services. Students will develop skills to take advantage of career opportunities in the agricultural sales field.

AEC 340 - Agricultural Finance
Hours: 3
Agricultural Finance. Three semester hours. Analysis of capital investments, interpretation of financial statements, capital structure considerations for agricultural firms, farm real estate pricing, and financial intermediation in agriculture.

AEC 347 - Agricultural Price Theory
Hours: 3
Intermediate microeconomic principles with agricultural commodity applications related to market price determination, resource allocations, and government policies.

AEC 348 - Principles of Macroeconomics of Agriculture
Hours: 3
A study of macroeconomic principles with their application to problems of agricultural production, distribution, and income; the interrelationship between agriculture and other segments of the economy; and the dynamic forces in the economy which impact agriculture.

AEC 350 - Agricultural Finance Laboratory
Hours: 1
Students will be exposed to hands-on agricultural finance problem-solving techniques using technology.

AEC 360 - Agricultural Law
Hours: 3
Agricultural Law. Three semester hours. Survey of law and legal decisions that impact agriculture including farm and preservation, water rights, pollution abatement standards, workers' rights, externalities, pesticide/insecticide regulation, product inspection, development of legislation, mineral rights and employer liability. Prerequisite: Junior standing.

AEC 380 - Agricultural Statistics
Hours: 3
Principles and estimation techniques used in the analysis of agricultural data including measures of central tendency and dispersion, probability, sampling, hypothesis testing, analysis of variance, correlation coefficient, and regression. Prerequisites: MATH 1314 or MATH 1324.

AEC 389 - Independent Study
Hours: 0-4
Independent Study. One to four semester hours. Individualized instruction/research at an advanced level in a specialized content area under the direction of a faculty member. May be repeated when the topic varies. Prerequisite: Consent of department head.

AEC 390 - Agricultural Statistics Laboratory
Hours: 1
Students will be exposed to hands-on agricultural statistics problem-solving techniques using technology.

AEC 435 - Agricultural Policy I
Hours: 3
Analytical treatment of historical, recent and current economic problems, and governmental policies influencing American agriculture and rural America. The focus is on developing an historical and conceptual understanding of the economics of agriculture and how public policy has and does influence the nature and performance of American agriculture.

AEC 445 - Natural Resource and Environmental Economics
Hours: 3
This course explores the approach that economists take to environmental and resource problems. It examines both the economic roots of environmental problems and the solutions that economists suggest. The course focuses on questions a policymaker must face in deciding how and when to regulate, including issues of efficiency and distribution.

AEC 455 - Commodity Futures and Options
Hours: 3
The objectives of this course are to understand why futures exchanges and commodity futures contracts exist; understand and be able to forecast basis; understand hedging and be able to design hedging strategies for various commodity producers and users; understand both put and call options and their potential use in a commodity risk management program; and understand the usefulness and shortcomings of fundamental and technical analysis.

AEC 489 - Indst Ag Economics
Hours: 1-4
Independent Study. One to four semester hours. Individualized instruction/research at an advanced level in a specialized content area under the direction of a faculty member. May be repeated when the topic varies. Prerequisite: Consent of department head.

AEC 497 - Special Topics
Hours: 1-4
Special Topics. One to four semester hours. Organized class. May be repeated when topics vary.

AG 1131 - Intro To Agriculture
Hours: 1
(AGRI 1131) Introduction to agriculture and its relationship to the sciences. Also explores careers and opportunities in agriculture. Insights into the agriculture curriculum and course content are also presented. Required of all agriculture majors.

AG 201 - Biological Literature
Hours: 3
This course provides students with the fundamentals of scientific thinking and scientific writing. The course starts with a brief overview of the history and philosophy of science as it pertains to biology. Students will learn about empiricism, parsimony, and how to apply the scientific method to developing and testing hypotheses. Students will be taught how to write in scientific style; naming conventions, how to cite scientific names, how to avoid obfuscatory scrivenry, establishing flow, organizing a scientific document, how to write an abstract, how to present scientific data and statistics, how to cite figures and tables, how to cite scientific sources, how to avoid plagiarism, and how to find scientific information. Concepts of bioethics will be presented at the end of the semester. Crosslisted with: BSC 201.

AG 297 - Special Topics
Hours: 0-4
Organized class. May be repeated when topics vary.

AG 300 - Professional Agricultural Communications
Hours: 1
Professional Agricultural Communications. One semester hour. Techniques of agricultural communication emphasizing principles involved in job search. Techniques of interviewing, resume writing, letters of inquiry, etc. For agriculture majors. Prerequisites: ENG 1301 and junior standing.

AG 314 - Comparative Vertebrate Physiology
Hours: 3
The course is a comparative study of basic physiological principles and functional organization with emphasis on the functioning of organ systems in various vertebrate classes and their adaptation to the environment leading to an understanding of evolutionary relationships. The course evaluates i) the mechanisms by which animals perform their life-sustaining functions, ii) the ways in which diverse phylogenetic groups of animals both resemble each other and differ, iii) the ways in which physiology and ecology interact, and iv) the importance of all levels of organization, from genes to proteins and tissues to organs, for the full understanding of physiological systems. Crosslisted with: BSC 314.

AG 315 - Ecological Genetics
Hours: 3
Ecological genetics is about how environmental and population-level processes affect the genetic structure of populations. The course begins with a basic overview Mendelian genetics followed by an in-depth study of population genetics and the intrinsic and extrinsic processes that influence the genetic composition of populations and metapopulations. Because the interaction between genes and the environment fundamentally affect the viability of populations, ecological genetics has broad relevance for understanding population stability and maintenance healthy populations. Crosslisted with: BSC 315.

AG 316 - Becoming a Wildlife Professional
Hours: 3
Working with wildlife can be a thrilling adventure steeped in the wonders of the natural world, but entering the field demands a strong personal commitment. Students will gain knowledge in the proper training and guidance needed to transform themselves into competitive applicants for wildlife jobs and forge successful careers. Student will learn about many entry-level jobs available for the next generation of wildlife biologists and conservationists. Over 100 diverse career options for aspiring wildlife workers will be presented, including work in biological field research, forestry, rehabilitation, ranching, photography, and refuge management. Students will learn the best ways to prepare for a vocation in the wildlife profession while obtaining pragmatic advice about applying for and obt Crosslisted with: BSC 316.

AG 335 - Wildlife Management I
Hours: 3
Wildlife Management I. Three semester hours. The purpose of this course is to introduce students to the many aspects of wildlife and conservation science. It will provide an introduction to the history of wildlife management and conservation, ecosystems and ecology, population modeling, animal behavior, food and cover, wildlife diseases, predators and predation, and hunting and trapping. Offered: FALL

AG 336 - Wildlife Management II
Hours: 3
Wildlife Management II. Three semester hours. This course is designed to complement Wildlife Management I and provides an introduction to the many aspects of wildlife ecology and conservation science. Topics covered include water and soils, farmlands, rangelands, and forests, parks and refuges, urban wildlife management, and non-game and endangered species. Students are required to participate in field trips designed to give practical experience in wildlife management techniques.

AG 337 - Field Methods in Wildlife and Conservation Science
Hours: 4
This course provides students with practical training in the methods used to collect quantitative data on plant and animal populations, animal movements and home ranges, habitat associations, and animal behavior. Field exercises are integrated with lecture material emphasizing study design, statistics, and data interpretation. Crosslisted with: BSC 337.

AG 338 - Wildlife Management Techniques
Hours: 3
This class will develop the principles and techniques for managing wildlife populations. Topics covered will include experimental design, hypothesis testing, scientific writing, techniques for capturing and marking wildlife, age and sex determination, parameter estimation (population size, density, survival, etc.), radio-telemetry, home range and resource selection. Students enrolled in this course must be willing to participate in a field-based classroom research project when and where feasible. Crosslisted with: BSC 338.

AG 339 - Becoming a Wildlife Professional
Hours: 3
Working with wildlife can be a thrilling adventure steeped in the wonders of the natural world, but entering the field demands a strong personal commitment. Students will gain knowledge in the proper training and guidance needed to transform themselves into competitive applicants for wildlife jobs and forge successful careers. Student will learn about many entry-level jobs available for the next generation of wildlife biologists and conservationists. Over 100 diverse career options for aspiring wildlife workers will be presented, including work in biological field research, forestry, rehabilitation, ranching, photography, and refuge management. Crosslisted with: BSC 339.

AG 350 - Introduction to Sustainable Agriculture
Hours: 3
This course introduces students to the common principles and practices associated with sustainable agriculture from ecological, economical, social, and ethical perspectives.

AG 352 - Urban Agriculture
Hours: 3
This course provides an extensive overview of agriculture and food security issues and practices at the local level in cities in the U.S. and abroad.

AG 381 - Big Game Management
Hours: 3
This class will expose students to concepts of managing major big game species in North America (i.e. white-tailed deer, feral hog, desert mule deer, pronghorn antelope, desert bighorn sheep, javelina, mountain lion, bear), with focus on the conservation practices of those species in Texas. Overview of topics include taxonomy, life history, harvest management, habitat management, population estimation, and conservation ecology of exotic species. Additional topics cover wildlife diseases, genetics, economic significance, and human dimensions. Indoor lab exercise will cover identification and aging of species. Field trips will expose students to actual management practices conducted in the field and provide an opportunity for applied skills in planning field studies, data collection, analysis, and synthesis of a management plan. Crosslisted with: BSC 381.

AG 383 - Waterfowl Management
Hours: 3
The course will expose students to concepts of managing waterfowl in North America (i.e.with focus on the conservation practices of those species in Texas. Overview of topics include taxonomy, life history, harvest management, habitat management, population estimation, and conservation ecology of exotic species. Additional topics cover wildlife diseases, genetics, economic significance, and human dimensions. Indoor lab exercise will cover identification and aging of species. Field trips will expose students to actual management practices conducted in the field and provide an opportunity for applied skills in planning field studies, data collection, analysis, and synthesis of a management plan.

AG 385 - International Wildlife Conservation
Hours: 3
The course covers select topics in wildlife conservation such as biodiversity, habitat management, and cultural and political influences for the conservation of fauna in major biomes of Africa, Asia, Europe, Latin America, Oceania and other regions of the world. Students will i) build an understanding of and appreciation for diverse perspectives in wildlife management approaches throughout the world, ii) Competently assess and apply past and current ecological principles to evaluating international approaches to wildlife conservation, iii) Demonstrate constructive dialog with diverse perspectives focusing on international wildlife conservation, and iv) Critically assess an international wildlife conservation policy issue using examples from scientific literature.

AG 389 - Independent Study
Hours: 0-4
Individualized instruction/research at an advanced level in a specialized content area under the direction of a faculty member. May be repeated when the topic varies. Prerequisite: consent of department head.

AG 392 - Appld Ethics US World Ag
Hours: 3
This course examines major, contemporary issues in agriculture and food policy with emphasis on the ethical aspects of each issue. Discussion focuses on assessing the particular economic, cultural, geographic, political, religious, technological and scientific principles with a moral and ethical framework. Course scope is approximately half U.S. domestic issues and half international issues. Prerequisite: Junior standing.

AG 397 - SPECIAL TOPICS
Hours: 1-4
Special Topics. One to four semester hours. Organized class. May be repeated when topics vary.

AG 400 - Seminar
Hours: 1
Seminar. One semester hour. Techniques involved in presenting scientific and technical oral reports. Oral presentations required. Prerequisites: Senior standing.

AG 402 - Ornithology
Hours: 3
This course begins with an overview of current theories regarding the origins of birds and flight. This is followed by a brief survey the living orders and their biogeography. Other topics include the mechanics and adaptations for flight, avian physiology and anatomy, migration, communication and behavior, ecology, and avian conservation. Prerequisites: BSc 301 with a minimum grade of C. Crosslisted with: BSC 402.

AG 404 - Vertebrate Biology
Hours: 3
This course takes a systematic approach to understanding vertebrate evolution, diversity and biology. It will follow the development of each vertebrate taxon through the fossil record from late Cambrian to the present. This is followed by discussions of vertebrate zoogeography, habitat and foraging, feeding modes, dispersal and migration, mating systems and parental care. Prerequisites: BSC 301 with a minimum grade of C. Crosslisted with: BSC 404.

AG 405 - Internship Agri-Industries
Hours: 3-6
Three to six semester hours. This course provides the opportunity for students to gain on-the-job experience in the preparation for careers in the rapidly growing agri-related areas of industry and business. Assignments will be at an approved work situation under supervision of a designated faculty member. Ten to twenty hours per week will be required.

AG 406 - Mammalogy
Hours: 3
The objective of this course is to survey the phylogenetic relationships, diversity, biology, and ecology of mammals, including an understanding of the characterization of the orders and families of the extant mammals based on morphological traits, evolutionary Crosslisted with: BSC 406.

AG 408 - Nutritional Biochemistry
Hours: 3
Nutritional Biochemistry - Three semester hours A course in biochemistry using nutrition as a model. Topics will include the energetics of metabolism, the structure and metabolism of proteins, carbohydrates, lipids and the integration of metabolic systems. Included also will be the chemistry of nitrogenous bases and how transcription and translation is accomplished on the cellular level. The course is 3-credit-hour class with 3 hours lecture and no lab (3,0). Prerequisites: CHEM 2123 with a minimum grade of C or CHEM 1307 with a minimum grade of C.

AG 412 - Fundamentals of Biostatistics
Hours: 3
The objective of this course is to provide students with the knowledge and understanding of the methods of statistical analysis applicable to biological research. Emphasis will be placed on the concepts and application of statistical thinking. Basic probability theory, parametric and non-parametric statistics including t-tests, analysis of variance, correlation, regression, and other quantitative methods will be introduced. Prerequisites: MATH 1314 with a minimum grade of C. Crosslisted with: BSC 412.

AG 415 - Upland Bird Ecology and Management
Hours: 3
Status, ecology, management, and conservation issues of North American upland game birds. Student will understand the role of upland game bird professionals. Develop knowledge of the status of North American upland game birds. Understand the basic principles of upland game bird ecology and management. Learn to apply knowledge to solve conservation problems. Crosslisted with: BSC 415.

AG 416 - Wildlife Population Biology
Hours: 3
Three semester hours (2 lec / 2 lab) This course outlines processes governing the abundance and distribution of animals and plants, and the consequences for natural resource management. Practical applications lie in wildlife management, sustainable harvesting of resources, pest control and conservation of endangered species. Topics will include mathematical models of population growth, population viability analysis, and metapopulations, dispersal, population harvesting, predation, population cycles, and competition. Prerequisites: Math 142 or MATH 2312. Crosslisted with: BSC 416.

AG 417 - Geospatial Mapping
Hours: 3
The course will provide basic knowledge of the fundamentals of Geographic Information Systems (GIS), including GIS theory and applications. The course will take a hands-on and problem solving approach to learning GIS and will cover basic GIS including map characteristics and projections, spatial data models, relational databases, and spatial analysis with a focus on natural resource research and management and environmental science. Crosslisted with: BSC 417.

AG 418 - Undergraduate Research Experience
Hours: 1-3
This is a research-intensive course that requires permission from instructor for registration. The course is offered as a variable-credit course, meaning that students may elect to take between 1-3 credits, with a maximum of 3 credits applied towards the degree requirements, at any stage of their undergraduate degree standing (1st-4th year) after they have declared their major. Research projects undertaken by the undergraduate student are managed by a faculty mentor in CASNR based on the credit-hour requirements and the research interests of the student. Students will formulate a contract with the faculty mentor to design and implement inventory and monitoring of wildlife resources at TAMUC, including the Farms, Wetlands, and private or public lands on which research is undertaken by TAMUC faculty and graduate students. Field labs will consist of field work consistent with the experience level of the student and provide an opportunity for applied skills in planning field studies, data collection, analysis, and synthesis of a management plan.

AG 423 - Natural Resources Management
Hours: 3
An investigation of best management practices and conservation techniques used by landowners and managers to protect renewable natural resources from intensive agricultural production. Emphasis will be on preventing soil loss and contamination, maintaining water quality, and protecting wildlife habitat.

AG 435 - Wildlife Habitat Ecology and M
Hours: 3
This class will expose the student to the history and concepts of an animal's habitat beginning with the ideas of Aldo Leopold to current ideas of what habitat is. Students will be introduced to principles and techniques of habitat management as they apply to forest, rangeland, wetland, and agricultural ecosystems. Current concepts of Conservation Biology such as fragmentation, meta-population ecology, and corridor ecology will also be covered. Students enrolled in this course must be willing to attend field trips when and where feasible to see actual management practices conducted in the field. Crosslisted with: BSC 435.

AG 436 - Plant Diversity & Conservation
Hours: 3
The course focuses on patterns and distribution of plant diversity and threats to plant diversity. Range of strategies and approaches used in plant conservation will be discussed. Crosslisted with: BSC 436.

AG 438 - Wetland Ecology and Management
Hours: 4
Four semester hours (3 lec / 2 lab) This class will address the ecology of wetlands from a systems approach, starting first with what defines a wetland both legally and functionally, and covering important and defining principles of hydro-period, soils, wetland plants, wetland succession, delineation, and wetlands as wildlife habitat. The lab will immerse students in field exercises ranging from wetland plant collection and identification, and wetland bird identification. Students enrolled in this course must be willing to attend field trips when and where feasible to see different wetland types and the function and values they provide. Prerequisites: BSC 307. Crosslisted with: BSC 438.

AG 440 - Human Dimensions of Wildlife
Hours: 3
Human Dimensions of Wildlife Management explains how a wildlife professional can more effectively manage species and social-ecological systems by fully considering the role that humans play in every stage of the wildlife management process. Human Dimensions of Wildlife Management provides the essential information that students and practitioners need to be effective problem solvers to handle a variety of situations, such as managing deer populations in residential areas, encounters between predators and people, or managing citizen input on wildlife issues. Topics will include human dimensions of wildlife management and conservation, wildlife use (hunting and fishing), working with public and private landowners, involving citizen scientists, managing citizen input, using economics to inform Crosslisted with: BSC 440.

AG 462 - Agroecology
Hours: 3
AG 462 Agroecology is a three hour course to understand agroecological concepts that incorporate ideas about a more environmentally and socially sensitive approach to agriculture, one that focuses not only in production, but also in ecological sustainability of a production system. Crosslisted with: BSC 462.

AG 463 - Landscape Ecology
Hours: 3
AG 463 landscape Ecology is a three hour course designed to provide an overview of the relationships between ecological processes in the environment and particular ecosystems using a variety of landscape scales, development of spatial patterns, and organizational levels of research and policy. Crosslisted with: BSC 463.

AG 464 - Principles of Sustainability
Hours: 3
AG 464 Principles of Sustainability is a three hour course designed to provide an overview of the social and biological principles of sustainability. An emphasis will also be placed on understanding on the education, health, population dynamics, culture, agriculture, food security, and natural resources aspects of sustainability. Crosslisted with: BSC 464.

AG 489 - Indst Agricul Sci
Hours: 3
Independent Study. One to four semester hours. Individualized instruction/research at an advanced level in a specialized content area under the direction of a faculty member. May be repeated when the topic varies. Prerequisite: Consent of department head.

AG 490 - H Honors Thesis
Hours: 0-6
AG 490 - H Honors Thesis Hours: 6 Individualized instruction/research at an advanced level in a specialized content area under the direction of a faculty member. Prerequisite Consent of head. Note May be repeated when the topic varies.

AG 491 - H Ind Honors Readings
Hours: 3
AG 491 - H IND HONORS RDGS Hours: 3 Individualized instruction/research at an advanced level in a specialized content area under the direction of a faculty member. Prerequisite Consent of head. Note May be repeated when the topic varies.

AG 497 - Special Topics
Hours: 1-5
Special Topics. One to five semester hours. Organized class. May be repeated when topics vary.

AMC 2303 - Agricultural Welding Techniques
Hours: 3
(AGRI 2303) Three semester hours (2 lec / 2 lab) Introduction to oxy-fuel cutting/welding, shielded metal arc welding, and gas metal arc welding processes in context of applications in agricultural equipment repair and fabrication.

AMC 297 - Special Topics
Hours: 1-4

AMC 315 - Agri Systms Technology Mgmt
Hours: 3
Agricultural Systems Technology Management. Three semester hours (2 lecture, 2 lab). Preliminary study to acquaint student professionals with the principles and theories needed to comprehend and manage agricultural and environmental technology; introduce the application of information technology to agricultural and environment systems; develop mathematical concepts and unit analysis skills associated with machinery and equipment, industry and marketing, energy, structural and environmental and natural resource systems. Focus shall be on basic knowledge rather than on in-depth analysis of the systems covered. Prerequisites: Math 141 or consent of the instructor.

AMC 389 - Independent Study
Hours: 1-4
Independent Study. One to four semester hours. Individualized instruction/research at an advanced level in a specialized content area under the direction of a faculty member. May be repeated when the topic varies. Prerequisite: Consent of department head.

AMC 397 - Special Topics
Hours: 1-4
Special Topics - 1-4 Semester Hours

AMC 424 - Agricultural Safety
Hours: 3
Three semester hours (2 lec / 2 lab) Principles and strategies for implementing safety training and reducing risk of injuries in agricultural enterprises including shop and machinery operations, chemical applications, livestock handling, transportation, and farm-based recreation. Prerequisites: Junior or instructor approval.

AMC 425 - Housing and Home Improvement
Hours: 3
This course addresses contemporary issues relevant to residential family housing and home improvement.

AMC 426 - Agri Power & Energy Management
Hours: 3
A study of the principles and theories needed to comprehend and manage agricultural and environmental technology associated with machinery/ equipment and energy systems. Reduction and synthesis of natural and applied science principles which involve mechanical, electrical, chemical power systems; the adjustments, fabrication, maintenance, repair and man agreement of machines and equipment utilized in said systems; knowledge of entrepreneurship, client relations, communications, economics, safety, service, planning, and regulation of technologies associated with agriculture and the environment.

AMC 428 - Laboratory Management in Agricultural Mechanization
Hours: 3
Principles and techniques for planning, organizing, and supervising instructional activities in agricultural mechanization. Topics include lab safety, inventory control, equipment selection, skill development, and assessment methods.

AMC 489 - Independent Study
Hours: 1-4
Independent Study. One to four semester hours. Individualized instruction/research at an advanced level in a specialized content area under the direction of a faculty member. May be repeated when the topic varies. Prerequisite: Consent of department head.

AMC 497 - Special Topics
Hours: 1-4
Special Topics. One to four semester hours. Organized class. May be repeated when topics vary.

PLS 1107 - Applied Plant Science Lab
Hours: 1
(PLS 1107) Course will provide students with hands-on exercises in the lab, greenhouse, and field. Students will grow agronomic and vegetable crops, examine seeds with a hand-lenses, separate plants into their morphological components, prepare and view cross sections of leaves and stems, identify agronomically important seeds and plants, conduct a seed or plant experiment via greenhouse or take-home components, calculate fertilizers and other agronomic math problems, and view agronomic equipment.

PLS 1115 - Introduction to Horticulture Laboratory
Hours: 1
(AGRI 1115) Introduction to the techniques and science for the growth and propagation of horticultural plants, including identification, propagation, fertilization, and pruning.

PLS 1307 - Introduction to Plant Science & Agronomy
Hours: 3
(PLS 1307) An introduction to the principles of plant growth, plant morphology, crop development and production, tillage and soil conservation practices, pest management, crop improvement, and crops of the world.

PLS 1315 - Introduction to Horticulture
Hours: 3
(AGRI 1315) Introduction to the science and art of modern horticultural plant production and growth, including propagation, fertilization, pest control, and pruning; major groups of garden crops including vegetables, fruits and nuts, ornamentals, houseplants, and florist crops. crops; lab includes propagation and culture of garden plants in field and greenhouse.

PLS 2313 - Economic Entomology
Hours: 3
(AGRI 2313) Three semester hours (2 lecture, 2 lab). This course introduces students to the major orders of insects and other arthropods of economic importance with specific emphasis on those beneficial and harmful to agricultural and horticultural crops, livestock, pets, and food products. Control techniques using Integrated Pest Management will be included.

PLS 230 - Ornamental Plant Identification
Hours: 3
Three semester hours (2 lec / 2 lab) Ornamental trees, shrubs, vines, and garden annuals and perennials. Their identification, nomenclature, classification, cultural requirements and landscape uses.

PLS 297 - Special Topics
Hours: 1-4
Organized class. May be repeated when topics vary.

PLS 303 - Introduction to Floral Design
Hours: 3
Three semester hours (2 lec / 2 lab) Introduction to the history and uses of floral art in society. Principles and elements of design will be discussed and demonstrated using floral materials.

PLS 305 - Landscape Design
Hours: 3
Design of residential and commercial landscapes. The student will learn basic design concepts and themes, be able to create landscape plans, and will be able to provide a cost estimate for the design. Prerequisites: PLS 230 or instructor approval.

PLS 306 - Plant Propagation
Hours: 3
Three semester hours (2 lec / 2 lab) This course provides an introduction to sexual and asexual plant propagation. The student will learn the skills and techniques to successfully propagate plants from seeds and other vegetative structures. Prerequisites: PLS 1315 or PLS 1307.

PLS 309 - Soil Science
Hours: 3
Origin, formation, fertility and management of soils. Prerequisites: PLS 1307 or PLS 1315, and CHEM 1305 or 1311.

PLS 320 - Soil Fert-Plant Nutrition
Hours: 3
Soil Fertility and Plant Nutrition. Three semester hours. Elements required for plant nutrition and their effects on plant growth. Principles of uptake, transport and assimilation. Prerequisite: PLS 309.

PLS 323 - Field Crops
Hours: 3
Three semester hours (2 lecture, 2 lab). Principles of agronomic crop production practices. Major field crops and management techniques will be studied. Prerequisites: PLS 1307 OR PLS 1315.

PLS 324 - World Herbs and Vegetables
Hours: 3
A comprehensive overview of major and minor vegetable crops and culinary herbs grown around the world, U.S., and Texas in terms of center of origin, history, classification, economic importance and marketing patterns, nutritional value, physiological growth and development patterns, and commercial production practices. Prerequisites: PLS1307 Introduction to Plant Science or PLS 1315 Introduction to Horticulture.

PLS 326 - Forage and Pasture Crops
Hours: 3
Three semester hours (2 lec / 2 lab) The production, harvesting, storage, and uses of forage crops, hay and pasture crops, improvements, care and management of pastures given special emphasis. Practice work includes identification of seeds and plants, judging of hay, and field and pasture observation. Prerequisites: PLS 309.

PLS 327 - Hydroponic Crop Production
Hours: 3
Three semester hours (2 lec / 2 lab) Principles of hydroponic production systems, including types of system, nutrient solution preparation and management, crop response to aerial environmental factors and their manipulation, new technologies inherent to controlled environment agriculture (plant factories, vertical farming). Hands-on experience with the practice of hydroponic production of major vegetables (leafy greens, culinary herbs, and vine crops). Prerequisites: PLS 324 World Herbs and Vegetables.

PLS 329 - Soil Science Laboratory
Hours: 1
Atudents will explore laboratory techniques to determine soil physical and chemical properties that are related to plant growth. Prerequisites: PlS 115 or 1415, and Chem 1405 or 1411.

PLS 355 - Interior Plantscaping
Hours: 3
Three semester hours (2 lec / 2 lab) This course provides an introduction into interior plantscapes. The course will include identification, selection, installation, maintenance, and management of plants used in interior landscapes.

PLS 381 - Crop Physiology
Hours: 3
Physiological processes underlying crop management practices and their alternatives. Prerequisites: Chem 1407, PlS 115 or PLS 1415.

PLS 397 - Special Topics
Hours: 1-4

PLS 420 - Crop Production Practicum
Hours: 3
Crop Production Practicum. Three semester hours (1 lecture, 4 lab). Study of crop production practices in this area by actually planting, growing, harvesting, and marketing a crop: (a) Wheat or Oats; (b) Corn; (c) Grain Sorghum; (d) Cotton. A report, including costs and returns, will be due upon completion of the project. Course may be repeated when subject varies, up to a maximum of 9 hours. Prerequisite: PlS 115.

PLS 430 - Greenhouse Management
Hours: 3
Three semester hours (2 lec / 2 lab) This course covers greenhouse structures and equipment needed for successful plant production in a greenhouse. The student will learn about greenhouse construction, production, and management as a business venture. Prerequisites: PLS 309.

PLS 434 - Principles of Weed Science
Hours: 3
Three semester hours (2 lec / 2 lab) An introduction to the principles of weeds, weed control, and herbicides. Prerequisites: PLS 1307 or PLS 1315.

PLS 450 - Landscape Management
Hours: 3
Three semester hours (2 lec / 2 lab) This course covers information related to the management of landscapes on residential and commercial properties. Topics will include items related to effective installation and maintenance of landscape properties, including financial and personnel aspects of managing a landscape business. Prerequisites: PLS 309 or instructor approval.

PLS 455 - Turfgrass Management
Hours: 3
Three semester hours (2 lec / 2 lab) Establishment and maintenance of turfgrasses in lawns, sports fields, and golf courses. Course will include selection, planting, fertilization, maintenance, and pest and disease control. Prerequisites: PLS 309.

PLS 460 - Plant Taxonomy
Hours: 3
Three semester hours (2 lec / 2 lab) A systematic overview of the plant kingdom focusing on classification and identification of unknown specimens. Prerequisites: PLS 1307, PLS 1315, or BSC 1411.

PLS 489 - Independent Study
Hours: 1-4
Independent Study. One to four semester hours. Individualized instruction/research at an advanced level in a specialized content area under the direction of a faculty member. May be repeated when the topic varies. Prerequisite: Consent of department head.

PLS 490 - Independent Study
Hours: 3

PLS 491 - H Ind Honors Readings
Hours: 3

PLS 497 - Special Topics
Hours: 0-4
Special Topics. One to four semester hours. Organized class. May be repeated when topics vary.