SCHOOL OF AGRICULTURAL SCIENCES

About

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Website
The School of Agricultural Sciences (http://www.shsu.edu/academics/agricultural-sciences-and-engineering-technology/)

Highlights

The graduate program in agricultural sciences is designed to further the professional competence of those individuals engaged in production agriculture, careers in agricultural and related agencies, businesses and industries, and/or agricultural education and extension.

The Pirkle Engineering Technology Center provides specialized classrooms and an animal science research lab to service the Agricultural Sciences program with four additional support facilities with working laboratories. The Agriculture Center is home to the Indoor Arena, Meat Science Lab, Equine Science facilities, and a greenhouse. Nearby is the Horticulture Center with greenhouses and classroom. The William R. Harrell Engineering Technology Center provides excellent advanced teaching and research opportunities in the areas of power and machinery, electrification, geometrics, soil and water conservation, irrigation, drainage, landscaping, bio-fuels, and wood/metal construction and fabrication. The 1620+ acre Gibbs Ranch is home to purebred and crossbred beef cattle herds, a meat goat flock, and additional plant, soil, and animal resources used for instructional and research purposes. A new Agricultural Center is currently being built at Gibbs Ranch. Phase I will be completed in Fall 2023 and includes a new Plant & Soil Sciences head house, two modern greenhouses, a learning center, and a covered multi-purpose arena with an attached stall barn. Phase 2 includes a new equestrian center and meats/food technology laboratory.

Career Opportunities

Approximately twenty percent of our population is involved in occupations directly related to agriculture. Sectors such as production, banking, marketing, teaching, processing, and service in governmental agencies rely on the productivity of modern agriculture in meeting the daily needs of society.

- Master of Agriculture in Sustainable Agriculture and Food Environment (http://catalog.shsu.edu/graduate-and-professional/college-departments/science-and-engineering-technology/agricultural-sciences/mag-sustainable-agriculture-food-environement/)
- Master of Science in Agriculture (http://catalog.shsu.edu/graduate-and-professional/college-departments/science-and-engineering-technology/agricultural-sciences/agriculture-ms/)
- Graduate Certificate in Sustainable Agriculture (http://catalog.shsu.edu/graduate-and-professional/college-departments/science-and-engineering-technology/agricultural-sciences/certificate-sustainable-agriculture/)

Scholarships

The department is pleased to have various scholarships available to graduate students. Scholarships are usually one-time awards and are not automatically renewable. A student may reapply in subsequent years if eligibility requirements are met. Students MUST be registered for six or more hours in Agriculture or related courses each semester or forfeit the scholarship for that semester.

The Scholarship4Kats (http://www.shsu.edu/dept/financial-aid/scholarships/) program must be used to apply for departmental scholarships. Please note that application and admittance to the University is required prior to being able to access Scholarship4Kats. The program enables students to apply for all scholarships for which they are eligible, including those outside the Department of Agricultural Sciences. The deadline for departmental scholarships is November 1; non-departmental scholarship deadlines vary.

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Interdisciplinary Agricultural

AGRI 5064. Agricultural Internship. 1-6 Hours.
A directed study utilizing industry to develop an understanding of agricultural production and management principles. Course Equivalents: AGRI 5364 .

AGRI 5096. Independent Study. 1-3 Hours.
Students engage in arranged, advanced experiential learning and professional activities through the practical application of agricultural skills and knowledge specific to their individual needs and goals. The topic of study is mutually selected and approved by the student and Agricultural Sciences faculty. Variable Credit (1 to 3).
Prerequisite: Departmental Approval.

AGRI 5300. Advanced Fusing Metals & Non-Metals. 3 Hours.
Students explore principles and techniques of bonding and fusing metallic materials by the electric and oxyacetylene processes. Students study fluxes, chemicals, and oxidants used in joining metal as well as the joining of non-metallic materials by mechanical and chemical means.

AGRI 5310. Mechanized Harvesting & Handling Agricultural Products. 3 Hours.
Students study the fundamentals of selection, service, and operation of agricultural harvesting machines as well as the analysis and development of mechanical systems to feed and care for livestock. In addition, storage and handling facilities for agricultural products are discussed.

AGRI 5330. Advanced Rural Utilities. 3 Hours.
Student study the selection and use of electrical equipment as related to efficiency and economy in agricultural production, processing and storage of feeds, forage crops and grain in connection with livestock enterprises.

AGRI 5337. Behavior & Management of Domestic Animals. 3 Hours.
Students study behavior associated with domesticated animals. The effects of selective breeding, physical and social environments, and the developmental stage on social organization are studied. Additionally, aggressive behavior, sexual behavior, productivity, and the training of domestic animals are examined. Note: Students who have taken ANSC 4337 may not take AGRI 5337.
Prerequisite: Graduate Standing.

AGRI 5340. Advanced Animal Growth & Performance. 3 Hours.
This course is an advanced study of physiological and endocrine factors affecting growth and performance of domestic animals. The course may include the study of meat animal growth and developmental processes as they affect body and carcass composition, carcass quality and retail value. NOTE: Student who have taken ANSC 4310 may not take AGRI 5340.
Prerequisite: Graduate standing.

AGRI 5341. Contemporary Animal Agriculture Issues. 3 Hours.
Students investigate contemporary issues in animal agriculture and the food/meat industry. Primarily using in-depth discussion and debates, students analyze issues from the standpoint of producers, consumers, processors, and societal forces. This course allows students to explore differing viewpoints on an issue and prepare them to encounter these issues in their professional career.

AGRI 5350. Advanced Principles of Livestock Management. 3 Hours.
Students engage in a survey of current knowledge and concepts of beef production with emphasis on the stocker/feedlot segment. Includes feeding, management, marketing and disease control of stocker and feedlot cattle.

AGRI 5351. Agricultural Biosecurity. 3 Hours.
Students study the potential spread and prevalence of contagious organisms, reproductive diseases and contaminants in the agriculture, food, fiber, and natural resource industries. Concepts dealing with isolation, resistance, sanitation, containment, transportation, and food safety issues and potential economic impact to the agricultural industry and others are major topics. Note: Students who have taken AGRI 4350 may not take AGRI 5351.
Prerequisite: Graduate Standing.

AGRI 5360. Contemporary Agricultural Business Issues. 3 Hours.
Students analyze and discus current issues in agricultural business with appropriate principles and theories. Issues may include marketing, management, finance, policy, international, legal and ethical topics. Student participation is expected via reports throughout the semester or term reports.

AGRI 5361. Agricultural Policy. 3 Hours.
Students engage in an advanced analysis of government policies and programs important to agriculture. Topics may include: the policy making process and leaders, interest groups, organization and functions of federal and state agencies, policies relevant to production agriculture and natural resources, rural development, consumer and food safety, international marketing and food distribution.

AGRI 5362. Principles of Crop Protection. 3 Hours.
Students study the diagnosis, epidemiology, and control of plant pests. Causative and limiting factors are stressed. Designed for prospective or practicing teachers and technicians in the agro-chemical industry or in federal or state plant pest control agencies.

AGRI 5369. Special Topics in Advanced Agriculture. 3 Hours.
Students examine advanced special topics/issues and (or) subject matter in the field of Agricultural Science. The sub-divisional fields offered are: Agriculture, Animal Science, Agricultural Business, Horticulture and Crop Science, and Agricultural Mechanization. This course may be repeated as topics and subject matter change.

AGRI 5370. Food and Fiber Crops. 3 Hours.
Students study traditional plant breeding techniques and an overview of contemporary crop improvement methods. The physiology, adaptation, classification, taxonomy, and utilization of major crop species used for production of food and fiber are covered. Genetic and environmental influences on crop quality are discussed.

AGRI 5371. Agricultural Safety & Health. 3 Hours.
Students examine the hazards and necessary safety precautions associated with the food, fiber, natural resources and agricultural industry. Control strategies are explored, and prevention methods identified. Hazards examined include machinery, livestock, controlled spaces, pesticides, and other issues common to the food, fiber, natural resources, and agricultural industry. Note: Students who have taken AGRI 4371 may not take AGRI 5371.
Prerequisite: Graduate Standing.

AGRI 5379. Advanced Equine Nutrition. 3 Hours.
This course is an advanced review of the equine digestive system regarding anatomy, physiology, digestive processes, nutrient requirements, feedstuffs, management, and health care. NOTE: Students who have taken EQSC 4379 may not take AGRI 5379.

AGRI 5386. Capital Management in Agricultural Business. 3 Hours.
Students are provided an in-depth understanding of capital marketing, capital budgeting, financial planning, and appraisal principles important in the field of agribusiness.

AGRI 5394. Applied Horticultural Science. 3 Hours.
Students explore the identification, selection, and use of plants to improve the human environment as well as evaluate problems and create solutions to environments where plants and human interact. In addition, students focus on the soil-water-plant relationship of ornamental plants.

AGRI 5397. Animal Diseases & Public Health. 3 Hours.
Students study diseases shared in nature between animals and man. Emphasis is placed on how these diseases exist in natural environments, modes of transmission, and methods of control and prevention. Students explore infectious agents and the clinical signs that they cause in both humans and animals. Note: Students who have taken ANSC 4398 may not take AGRI 5397.
Prerequisite: Graduate Standing.

AGRI 5398. Economics Of Agricultural Production. 3 Hours.
Students explore agricultural production principles applied to the use of resources; cost analyses of production enterprises; linear programming of enterprises for maximizing returns; elements of depreciation schedules; evaluation for income tax purposes.

AGRI 6099. Thesis. 1-3 Hours.
In addition to the preliminary study of the techniques of research, this course involves completion of a bibliography, organization of material, selection of a suitable problem, a digest of related literature, selection of appropriate procedures, formulation of a plan of investigating and reporting, collection and organization of data, and the writing of the thesis. Variable Credit (3 hrs first semester; 1 hour subsequent semesters). Grade is either Credit or No Credit. Course Equivalents: AGRI 6399 .

AGRI 6140. Graduate Seminar. 1 Hour.
This course is designed to provide students a forum for presentation of their graduate project and to provide an opportunity for faculty to present seminars relative to contemporary issues in agriculture. The project is an agreement between student and his/her committee. Course cannot be repeated. Grade is either Credit or No Credit.
Prerequisite: AGRI 5375 or STAT 5360.

AGRI 6350. Techniques & Interpretation of Agricultural Research. 3 Hours.
A course designed to develop the competencies needed to interpret and utilize agricultural research. Topics will include: the philosophy of the scientific method, formats for agricultural research data, interpretation of data, and application of information to specific situations.
Prerequisite: STAT 5360.

AGRI 6398. Thesis. 3 Hours.
In addition to the preliminary study of the techniques of research, these courses involve completion of a bibliography, organization of material, selection of a suitable problem, a digest of related literature, selection of appropriate procedures, formulation of a plan of investigating and reporting, collection and organization of data, and the writing of the thesis. Grade is either Credit or No Credit.

Agriculture Education

AGED 5364. Advanced Problems in Agriculture Education. 3 Hours.
A directed individual investigation of advanced problems in Career and Technology Education.

AGED 5376. Personal Leadership & Organizational Dynamics. 3 Hours.
(SH Prior Course ID: AED 576); Concepts and practices in planning and presenting materials to agricultural groups. Includes leadership skills, concepts of community development, and dynamics of technological change.

AGED 5388. Secondary Agricultural Education Program Management. 3 Hours.
Students focus on developing and managing the youth leadership aspect of Agriculture, Food, and Natural Resources programs in public schools. Students examine leadership and career development events, agricultural education record book documentation system, Program of Activity development, financial management, student and chapter awards, community partnerships, program evaluation, and student management during extracurricular activities.

AGED 5393. Methods of Teaching Agricultural Education. 3 Hours.
Students study the professional competencies required for the teaching of agricultural education. Included is the development of curriculum and occupational education programs as well as evaluation of teaching techniques, procedures, and resource materials. Methods of teaching students with disabilities are discussed. Note: Students who have taken AGED 4364 may not take AGED 5393.
Prerequisite: Graduate Standing.

AGED 5394. Agricultural Education Learning Environments. 3 Hours.
Students examine classroom management and discipline approaches appropriate in secondary agricultural education (AGED) classrooms and laboratories. Proactive and preventative measures are discussed to ensure student safety and a successful learning environment. Note: Students who have taken AGED 4394 may not take AGED 5394.
Prerequisite: Graduate Standing.

Career and Technology

CATM 5364. Advanced Problems in Career & Technology Education. 3 Hours.
Designed to provide graduate students with the opportunity to gain specialized work-based experiences focused on solving problems in career and technology education.

Sustainable Agriculture & Food Environment

SAFE 5311. Advanced Agriculture & Food Entrepreneurship. 3 Hours.
This course will examine the initiation of new ventures and growth of existing firms in sustainable agriculture and food production through opportunity recognition, innovation, and change. An emphasis will be placed on developing effective entrepreneurial skills and behaviors, and risk management for start-ups. The preparation of a structured business plan will be required.

SAFE 5312. Agriculture Sales and Communication. 3 Hours.
This course will include the application of economic, marketing, sales, and communication principles to small-scale, intensive agriculture including organics and natural products. A focus will be placed on finding a competitive niche through market segmentation/demography, market research, product choice and differentiation, product positioning and pricing, product outlets and advertising, selling strategies, and the use of current and emerging communication tools.

SAFE 5313. Agritourism. 3 Hours.
This course will present the variety and depth of agritourism/ecotourism practiced globally and cover aspects of the economics and organization of agritourism. Topics include agricultural economics, rural development, marketing, rural policy, products and services, and characteristics of agritourists.

SAFE 5331. Sustainable Energy & Resources. 3 Hours.
This course will focus on determining energy requirements of various sustainable agricultural operations. Available energy sources will be examined as alternatives for traditional sources provided by fossil fuel. Innovative and emerging on-site production technologies for environmentally sensitive energy will be investigated.

SAFE 5351. Agricultural Advocacy. 3 Hours.
This course will examine common issues facing agriculturists in relation to the production of a safe and abundant food supply. A primary focus will include small-scale and direct-marketing producers and the challenges they frequently encounter from industry opponents. Positive and factual promotional strategies will be explored. Social issues, political influences, and topics such as food safety and ethics, biotechnology, genetically modified organisms, and animal welfare will be addressed.

SAFE 5371. Alternative Agriculture Enterprises. 3 Hours.
This course will evaluate various alternative agricultural enterprises available to producers, including an examination of the resources necessary to establish a successful production enterprise. Alternative enterprises to be discussed include forage crops, grains, fruits, vegetables, nuts, horticultural and forestry products, animals, and enterprises that promote education, recreation, and tourism. On-farm processing of products and methods of adding value to products before they leave the farm will also be explored.

SAFE 5372. Diversified Animal Production. 3 Hours.
This course examines various animal production systems in relation to alternative animal agriculture and integrated ranch and farm management strategies. Various livestock production and management strategies for small land-owners and urban food production will be studied. Livestock species and breed choices for sustainable production regimens and organic food systems will be explored.

SAFE 5373. Food Safety and Regulation. 3 Hours.
This course examines fundamental principles of microbiology as they relate to food safety and product development. Intervention methods to restrict microbiological growth from harvest to plate, including Hazard Analysis Critical Control Point (HACCP) and Sanitation Standard Operating Procedures (SSOP), are evaluated. In addition, state, federal, and international policies, and laws as they relate to the regulation of food production methods, product development, labeling, and product sales for organic, all natural, value-added, and other alternative food production methods are studied.

SAFE 5391. Soil Ecology. 3 Hours.
This course examines living organisms in the soil and their influences on each other, plant health, nutrient cycling, soil organic matter, and other important soil properties. The role of soil biodiversity and its importance in agricultural systems will be addressed along with strategies for enhancing soil productivity under human management activities.

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