



**KENTUCKY STATE  
UNIVERSITY**

## **AGRICULTURE/FOOD/ ENVIRONMENT (AFE)**

### **AFE 110: Agri., Food, & Envi. Lab**

This is a hands on class that provides students with a greater understanding of agriculture, food, and environmental systems. Students gain hands on experience in many of the common practices and procedures used for field and lab work in the different areas within AFE.

**Credit Hours: 1**

**Contact Hours: 1**

### **AFE 115: Intro to Agri., Food, & Envi.**

Students will gain a robust understanding of commonly used terms and practices in all areas covered by the AFE degree program tracks. The course focuses on topics pertinent, but not limited, to plant and animal agriculture, environmental systems, aquaculture, and food and nutrition. Students will be able to use terminology and exercise basic calculations commonly used in agriculture. This will help prepare them for additional classes within their chosen program areas. This course also familiarizes students with career options, necessary academic preparation, and how to search for a job in food, environmental science and agriculture. In addition to lectures, students will visit several environmental science/agriculturally related venues in Kentucky.

**Credit Hours: 3**

**Contact Hours: 3**

### **AFE 116: Intro Agriculture/Food/Environ**

This course familiarizes students with career options, necessary academic preparation, and how to search for a job in environmental science and agriculture. In addition to lectures, students will visit environmental science/agriculturally related venues in central Kentucky. (One hour of lecture per week plus field trips)

**Credit Hours: 2**

**Contact Hours: 2**

### **AFE 117: Global Perspect Ag/Food/Env**

Students will explore agriculture, food science, and environmental issues across the planet and how these issues also impact people in the United States. Climate change, international challenges to food production, expanding international markets, global competition in producing food and energy, and international environmental challenges will be examined. (Three hours of lecture each week)

**Credit Hours: 3**

**Contact Hours: 3**

### **AFE 118: Intro to Ferm. & Distill. Sci.**

Intro to Fermentation & Distillation Science. This course identifies the crops used as the raw ingredients of beer, wine, and distilled spirits and understand the molecular transformations of brewing and distilling.

Credit 3 semester hours

**Credit Hours: 3**

**Contact Hours: 3**

### **AFE 120: Principles of Agronomy**

Students explore the science of agronomy to include plant, soil, and turf sciences. Interactions of plant, soil, and turf sciences will be introduced along with all of the components of them which will include breeding, physiology, pathology, production, and the effects of meteorology.

**Credit Hours: 4**

**Contact Hours: 4**

### **AFE 130: Ferment. & Spirits Chem.**

Fermentation & Spirits Chemistry. This course deals with chemical processes and reactions that are necessary in the process of fermentation and distillation. Specific chemical bonding and reactions that are necessary for successful brewing and distillation as well as acid/base chemistry will be covered. Credit 4 semester hours.

**Credit Hours: 4**

**Contact Hours: 4**

### **AFE 211: Introduction to Animal Science**

This course provides the student with basic information on livestock production and management of food animals, primarily cattle, goats, sheep, swine, and poultry. It will include information on alternative and conventional production of animals.

**Credit Hours: 3**

**Contact Hours: 3**

### **AFE 212: Vet Clinical I**

This course provides hands on experience in the area of veterinary technology including hands on activities in veterinary clinics and on farm lab activities.

**Credit Hours: 2**

**Contact Hours: 2**

### **AFE 213: Animal Handling Practices Lab**

This class is designed to give additional training in areas of animal agriculture for students and includes both lecture and hands on activities. This course covers current humane handling practices of livestock and focus on Quality Assurance practices for the livestock species. Animal behavior will be covered as it relates to handling practices. Students will learn different restraint practice used in different species to reduce stress on the animals. Pre or Co Requisite: AFE 211. Credit: 1 semester hour.

**Credit Hours: 1**

**Contact Hours: 1**

### **AFE 215: Agribusiness Management**

This course provides an introduction to the management of non-farm businesses in agriculture. It includes: 1) the role of an agribusiness manager, 2) management as a strategy for long-term survival of a business, and 3) management of operations, marketing, financials, and human resources as part of an agricultural industry. Credit: 3 semester hours.

**Credit Hours: 3**

**Contact Hours: 3**

### **AFE 217: Plant Sci. & Horti. Principles**

An introduction to plant structure, function, physiology, nutrition, health, growth, and genetics and interactions between crop production systems and the environment. Conventional and organic growing processes of important food and ornamental crops in field and greenhouse settings will be explored. (Two hours of lecture, two hours laboratory per week)

**Credit Hours: 4**

**Contact Hours: 4**

**AFE 305: Intro. to Animal Dies & Mgmt.**

Class provides information on theoretical and practical information on animal disease, treatments, and management.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 306: Diagnosis Tech of Animal Dis.**

Covers common diagnosis test and practices used in veterinary clinics for disease detection.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 307: Animal Nutrition**

Course covers basics nutritional requirements of animals including lab, companion and farm animals. Includes some basic ration formulation and nutrition related diseases and conditions.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 308: Pharmacology for Vet. Techs.**

Course covers information on drug use, mixing of compounds, methods of administration, and legal issues related to drug administration and treatment of animals.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 309: Livestock Reproduction**

This course will cover the estrus cycle and reproduction of common livestock species. Discussing the anatomy and physiology of reproduction as well as applied techniques in current industries.

**Prerequisite:** AFE 211

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 311: Practicum I**

A course in which advanced AFE students pursue an independent experiential project off campus.

**Credit Hours:** 2

**Contact Hours:** 2

**AFE 312: Vet Clinical II**

This course provides hands on experience in the area of veterinary technology including hands on activities in veterinary clinics and on farm alb activities.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 318: Environmental Entomology**

An introduction to insects including their importance, basic anatomy, physiology, ecology and management. Identification of major orders and families of insects will be covered as well. This is a lecture, field and laboratory course. (Two hours of lecture, two hours of laboratory each week)

**Credit Hours:** 4

**Contact Hours:** 4

**AFE 322: Livestock Anatomy & Physiology**

Anatomy and Physiology of Livestock is designed for students entering livestock or veterinary careers. This course emphasizes Cattle, small ruminants, swine, and horses, poultry if time allows. Information to be covered will include the physical structures their functions and also brief mention to pathology and applied science. The course will take a systematic approach by teaching anatomy of each organs system in common species with the normal physiology of that system.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 334: Soil Science**

The course will explore interactions between soil, agriculture, and the environment. Topics include soil organic matter, soil contamination, water management and quality, soil classification, nutrient management, and soil remediation. After taking the course, students soon realize that soil concepts, earned in class, will reward them on the job market.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 340: Environmental Sci/Agroecology**

This course is intended for those with theoretical and practical interest in environmental issues and is designed to provide a wide range of subjects and practical work experience using standard methods, concepts and equipment in environmental science.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 359: Ferm. of Food & Food Safety**

This course covers issues and concerns related foods to food safety and microbiology focusing on fermented foods. This course explores the concepts of Hazard Analysis Critical Control Points (HACCP) as it relates to fermented and distilled foods.

**Credit Hours:** 4

**Contact Hours:** 4

**AFE 366: Climate Change Studies**

This course provides scientific basis of Earth's climate system, climate variability and change and mitigation and adaptation strategies within the context of global environment change.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 401: AFE Seminar**

This course aims at familiarizing students in the field of scientific communication, especially in scientific presentations of their research experience/findings in the various specialized course offerings in the College of Agriculture, Food Sciences and Sustainable Systems. In addition to being trained in scientific writings, students will get an opportunity to present their research findings to their peers and in professional meetings of various societies, depending on the opportunity presented.

**Credit Hours:** 1

**Contact Hours:** 1

**AFE 404: Nutrition and Metabolism**

This course takes the fundamentals of basic nutrition – calorie intake, macro-nutrients, energy production/consumption, vitamins/minerals, and other principles – and informs the student on how these elements are integrated with one another through metabolism. Students will cover the metabolic pathways of carbohydrates, lipids, protein, amino acids, and vitamins/minerals and how they are all interconnected. In addition, this class will explore the nature of metabolic diseases and how nutrition plays a significant role.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 405: Res/Extension in Nutrition**

This course will provide substantial opportunities to conduct research, provide education, and participation in Extension activities in order to give students a chance to explore different work experiences in nutritional science.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 407: Agroforestry:Local/Global Pers**

Students will examine and have an understanding of how different agroforestry systems function with landscapes across multiple scales (plot, watershed, landscape) and how these systems contribute to achieving multiple benefits (environmental, social, economic, etc.)

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 408: Anesthesiology & Surgical Proc**

Course covers basic principles of administering and monitoring animals under anesthesia as well as basic surgical procedures.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 410: Seminar**

**Credit Hours:** 2

**Contact Hours:** 2

**AFE 411: Practicum II**

A course in which advanced AFE students pursue an independent experiential project off campus.

**Credit Hours:** 2

**Contact Hours:** 2

**AFE 412: Vet Clinical III**

This course provides hands on experience in the area of veterinary technology including hands on activities in veterinary clinics and on farm lab activities.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 415: Livestock Production Practices**

Course will explore conventional and alternative production practices for the major livestock species produced in Kentucky. Students will learn about organic, forage based, and antural production practices and how they compare to conventional production of cattle, goats, sheep, pigs, and poultry. They wil have hands on experience with working with livestock to learn basic handling and management procedures.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 416: Nutrition and Society**

This course is intended for those with theoretical and practical interest in the field of Nutrition and how it plays a role in community and society. During this course, students will have the opportunity to learn specific elements of nutrional education, nutritional epidemiology, policy factors, nutrition and culture, and other areas related to nutrition and society.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 417: Modern Nutrition and Disease**

This course is intended for those with theoretical and practical interest in the field of Food and Nutrition Sciences, and will give an overview of the role of Nutritional Science as it relates to health with special emphasis on disease prevention and management of disorders and diseases of various body systems.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 425: Organic Crop & Livestock Prod**

Principles and practices of organic agriculture are presented in the context of their historical, philosophical, economic, and scientific underpinnings. Students will develop a broad theoretical and practical understanding of organic agriculture.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 426: Agriculture Econ. and Market**

This course discusses economics, farm management, and marketing from an agricultural, and aquaculture, perspective. The focus is on economic relations that would apply to aquaculture and agriculture, in general. Most economics discussions will be presented by drawing graphs instead of writing formulas, although some formulas will also be discussed. The main goal is to prepare students to have the ability to manage a farm from a production, marketing, financial, and business planning perspective. Overall, the course will use a practical approach that would appeal to the understanding of most students. Credit: 3 semester hours.

**Prerequisite:** MAT 115 or MAT 176

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 435: Urban Agriculture**

Examine contributions of ornamental and food gardens to community health and food system sustainability. Explore potential of compact urban agriculture to offset community food needs through high and low input production. Gain hands-on experience with tools, techniques and practices used to grow and process food and ornamental crops in urban environments.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 440: Ornamental / Landscape Plants**

This course provides an understanding of the identification, morphology, classification, nomenclature and adaptability of ornamental plants in landscape environments. The use of plants in home, business and park landscapes to reduce water use, pollutants, energy and labor inputs is examined.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 442: Plant Propagation/Crop Prod Sy**

This course provides an understanding of both traditional plant propagation and tissue culture as well as sustainable plant production systems. Sustainable practices and production of horticultural crops are also examined to reduce water use, pollutants, energy and labor inputs.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 443: Apiculture/Pollination Biology**

This will be online class covering the biology of honey bees and the pollination of flowers by bees, especially crop plants. This will include the morphology, physiology, phenology, behavior, parasites, pathogens, predators, and evolutionary biology of honey bees. The biology and practical aspects of crop pollination will be explored. Other pollinator bees will be discussed briefly.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 445: Agriculture and Energy**

Examine agriculture's role as a producer and consumer of energy in context of the broader food system and economy. Explolre potential to improve agricultural energy efficiency and produce energy on farms using solar, wind, hydro, biopower and biofuel technologies.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 450: Human Health/Environment**

Students taking this multidisciplinary course will have a holistic understanding how the physical, chemical and biological factors of the environment impact human health. Upon successful completion of AFE 450, Human Health and Environment, the students will be able to identify the types of association found between environmental hazards and human health outcomes.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 455: Food Safety and Microbiology**

This course is intended for those with theoretical and practical interest in the field of food sciences, especially those interested in a wide range of subjects and hands-on/practical approaches in microbial food processes, general food safety, public health and epidemiology. Various aspects of food production, maintenance, supply chains, potential contaminations, introduction to food borne toxins and outbreaks of food borne infections, safe food handling and preparation techniques will be introduced to the students. CREDIT: 3 SEMESTER HOURS.

**Prerequisite:** BIO 111, CHE 101, and CHE 110 or consent of instructor

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 459: Dir. Stud. in Ferm. & Dist. Sc**

This course provides students with a guided internship program to be able to demonstrate and apply knowledge in the fermentation arts. Students will work with a mentor either at the university or with an industry partner to design and conduct a project to expand their knowledge and skills in this area. This is a capstone course in the fermentation and distillation program.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 465: Food Systems**

Explore relationships among environment, food supply chains, security, quality, diet, and consumer health, with particular emphasis on system components after the farm gate. Discuss existing barriers to healthy and sustainable food consumption; and personal behavior and public policies with potential to overcome these barriers.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 480: Intro to Geog Inform Syst**

This course provides basic instruction in mapping technologies to enable natural resource staff, students, local and state government personnel to enhance their planning and resource management skills.

**Credit Hours:** 3

**Contact Hours:** 6

**AFE 485: Special Topics**

This course requires intensive examination of an Agriculture, Food, and Environmental (AFE) science topic chosen by a faculty member in Agriculture, Food, and Environment. This course will require intensive reading and discussion, as well as writing. Credit: 3 semester hours.

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 489: Remote Sensing of the Environ.**

The course introduces fundamental principles of remote sensing applications for recording electromagnetic energy from the earth's surface for studying vegetation, soil, water, and urban infrastructure. Credit: 3 semester hours.

**Prerequisite:** Consent of instructor

**Credit Hours:** 3

**Contact Hours:** 3

**AFE 495: Special Topics**

This course requires intensive examination of an Agriculture, Food, and Environmental (AFE) science topic chosen by a faculty member in Agriculture, Food, and Environment. This course will require intensive reading and discussion, as well as writing.

**Credit Hours:** 1-4

**Contact Hours:** 1-4