FOOD SCIENCE AND
TECHNOLOGY (FDST)

FDST 801 Teaching Applications of Food Science
Crosslisted with: FDST 401
Prerequisites: BIOS 101 and CHEM 109
Description: The science of food and how food can be used in the classroom to enhance science education. FDST 401 / 801 will not count toward a food science and technology major or minor.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

FDST 803 Food Quality Assurance
Description: Quality related issues as they pertain to manufacturing, processing and/or testing of foods; food regulations, statistical process control and Hazard Analysis of Critical Control Points (HACCP).
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

FDST 805 Food Microbiology
Crosslisted with: BIOS 445, BIOS 845, FDST 405
Description: Nature, physiology, and interactions of microorganisms in foods. Introduction to food-borne diseases, the effect of food processing systems on the microflora of foods, principles of food preservation, food spoilage, and foods produced by microorganisms. Food plant sanitation and criteria for establishing microbial standards for food products.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

FDST 806 Food Microbiology Laboratory
Crosslisted with: BIOS 446, BIOS 846, FDST 406
Description: The microorganisms in foods and the methods used to study them.
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Format: LAB

FDST 812 Cereal Technology
Crosslisted with: FDST 412, FDST 412H
Description: Chemistry and technology of the cereal grains. Post-harvest processing and utilization for food and feed. Current industrial processes and practices, and the theoretical basis for these operations.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

FDST 815 Molds and Mycotoxins in Food, Feed, and the Human Environment
Crosslisted with: FDST 415
Description: Occurrence, growth, and mycotoxin production of molds in human foods, animal feeds, and the human environment. Spoilage, mycotoxin production conditions, toxicity, and pathological effects. Culture media, methods and techniques for enumerating and identifying molds, analytical methods for mycotoxins, and effects of food and feed processing on mycotoxin stability.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

FDST 819 Meat Investigations
Crosslisted with: ASCI 419, ASCI 819, FDST 419
Description: Conduct independent research and study meat industry problems in processing, production, storage, and preparation of meat and meat products.
Credit Hours: 1-3
Min credits per semester: 1
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

FDST 820 Fruit and Vegetable Technology
Crosslisted with: FDST 420
Description: Harvesting and postharvest handling of fruit and vegetables, processing and safety issues, processes of ripening and/or maturation in fresh fruits and vegetables.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

FDST 825 Food Toxicology
Crosslisted with: FDST 425
Description: Toxic substances that may be found in foods with emphasis on bacterial toxins, mycotoxins, and naturally occurring toxicants of plants, animals, and seafood. Basic toxicological methodology and the effects of food processing and handling on food-borne toxicants.
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Format: LEC

FDST 829 Dairy Products Technology
Crosslisted with: FDST 429
Description: Physical, chemical, and microbiological properties of milk. Principles of milk processing and manufacture of cultured dairy products, cheeses, ice cream, and concentrated dairy products.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

FDST 830 Sensory Evaluation
Crosslisted with: FDST 430, STAT 430, STAT 830
Description: Food evaluation using sensory techniques and statistical analysis.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
FDST 841 Functional Properties of Food
Crosslisted with: FDST 441, NUTR 441, NUTR 841
Description: Relationship of structure and functionality of ingredients in food systems.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

FDST 842 Omnivore's Digestive-Tract Microbiome
Crosslisted with: FDST 442
Prerequisites: BIOS 312 or equivalent
Description: Detailed examples and conceptual overview of studies that define the digestive tract microbial ecosystem both at the local and systemic scale in the context of omnivores such as humans and animals are presented. The concepts in focus are associated with high-dimensional datasets (or big data) used for studying these complex biosystems, and the multi-dimensional interactions between the microbiomes in its ecosystem. Topics include the host-cycle of life in health and disease in relation to the bacteria of the digestive tract, as well as the modification of their ecology due to health issues, nutrition, and microbial competition or chemical modification.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
Offered: SPRING

FDST 845 Experimental Foods
Crosslisted with: FDST 445, NUTR 445, NUTR 845
Description: Introduction to food research. Application of research techniques to selected problems.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
Prerequisite for: FDST 455/855

FDST 848 Food Chemistry
Crosslisted with: FDST 448
Description: Molecular components of various foods and the reactions of these components during the processing of foods.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
Prerequisite for: FDST 460, FDST 460H, FDST 860

FDST 849 Food Chemistry Laboratory
Crosslisted with: FDST 449
Description: Experiments involving the isolation, purification, and characterization of the molecular components of foods.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LAB

FDST 855 Microbiology of Fermented Foods
Crosslisted with: FDST 455
Prerequisites: FDST 405/805
Description: Physiology, biochemistry, and genetics of microorganisms important in food fermentation. How microorganisms are used in fermentation and the effects of processing and manufacturing conditions on production of fermented foods. On-campus students must also register for FDST 455L/855L.
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Format: LEC

FDST 855L Microbiology of Fermented Foods Laboratory
Crosslisted with: FDST 455L
Prerequisites: FDST 405/805 and parallel FDST 455/855
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LAB

FDST 858 Advanced Food Analysis
Crosslisted with: FDST 458, FDST 458H
Description: Theory and application of molecular and atomic spectroscopy, immunochemistry and thermal methods to the analysis of foods. Chemical separation techniques for the isolation of food constituents.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

FDST 860 Food Product Development Concepts I
Crosslisted with: FDST 460, FDST 460H
Prerequisites: FDST 805 and 848
Description: Develop a commercially viable food product using chemical, microbiological and sensory analysis principles, and marketing and packaging sciences. Capstone course.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

FDST 865 Food Engineering Unit Operations
Crosslisted with: FDST 465, MSYM 465, MSYM 865
Description: Unit operations and their applications to food processing.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

FDST 870 Nutraceuticals and Functional Foods
Crosslisted with: FDST 470
Description: Evaluation of natural compounds impact on human health. Inflammation, cancer, heart disease, and the impact of gut micro-flora on health.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
FDST 871 A Multidisciplinary Overview of Food Safety and Security
Description: Instruction in FDST 871 is provided by numerous subject matter experts. Multidisciplinary food safety and security perspectives. Food safety policy, ag bioterrorism, border security, animal ID, food defense, and site security, risk analysis, crisis communication, epidemiology, Hazard Analysis and Critical Control Point System, and more.
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Format: LEC

FDST 872 Principles of Hazard Analysis and Critical Control Point System
Description: The Hazard Analysis and Critical Control Point (HACCP) System and its application in the food industry.
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Format: LEC

FDST 873 Food-borne Toxins
Description: Mechanisms of action, metabolism, sources, remediation and/or detoxification, and risk assessment of major food-borne toxins of current interest. Design of Hazard Analysis and Critical Control Point plans for use in food industries to target food-borne toxins.
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Format: LEC

FDST 874 Food Laws, Regulations, and the Regulatory Process
Description: FDST 874 has presentations by state and federal food regulators. History of the development of the current federal state food regulations. Guidelines that govern the practice of regulating the wholesomeness of red meats, poultry, and eggs.
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Format: LEC

FDST 875 Rapid Methods in Food Microbiology
Description: The different types of rapid microbial detection approaches available for use in foods. Commercial reagents and detection platforms, and the next generation approaches currently under development in academia or industry. Challenges to detection posed by the complexity of most food matrices and the sample preparation methods for separating microorganisms from such matrices.
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Format: LEC

FDST 876 Risk Assessment for Food, Agriculture, and Veterinary Medicine
Description: Risk assessment principles as applied to biological systems. Exposure and effects characterization in human and animal health and ecological risk assessment. Risk analysis frameworks and regulatory decision-making. Introduction to quantitative methods for risk assessment using epidemiological and distributional analyses. Uncertainty analysis.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

FDST 877 Advanced Food Microbiology and Biotechnology
Description: Basic principles in biotechnology and applied food microbiology. Current topics of interest in food biotechnology. Introduction to recombinant DNA techniques and how they are applied to genetically modify microorganisms. The use of nucleic acids as tools of rapid detection of microorganisms in foods, basic enzyme immobilization and down-stream processing techniques, and regulatory aspects of food biotechnology.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

FDST 878 Food Protection and Defense: Essential Concepts
Prerequisites: Admission to Food Safety & Defense certificate program; and permission
Description: Foundational concepts relevant to protecting the food supply from intentional contamination. Section 1 addresses the nature of the policy and regulatory aspects of food defense, threats to food and agricultural systems, as well as concepts and strategies related to response and mitigation of food protection incidents. Section 2 provides an understanding of the principles required in a food defense program for a food manufacturing, warehousing, or distribution center.
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Format: LEC

FDST 880 Advanced Food Science: Selected Topics
Credit Hours: 2-6
Min credits per semester: 2
Max credits per semester: 6
Max credits per degree: 6
Format: LEC

FDST 880A Food Carbohydrates
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Format: LEC

FDST 880E Food Flavors
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Format: LEC

FDST 880L Food Lipids
Description: n-depth discussion of: composition, quality, and chemical and physical properties and reactions of fats and oils in food systems; processing and refining of food fats and oils; manufacture of various fat and oil products; current research related to fats and oils.
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Format: LEC
FDST 896 Independent Study in Food Science and Technology  
**Description:** Individual or group projects in research, literature review, or extension of course work under supervision and evaluation of a departmental faculty member.  
**Credit Hours:** 1-5  
**Min credits per semester:** 1  
**Max credits per semester:** 5  
**Max credits per degree:** 5  
**Format:** IND

FDST 899 Masters Thesis  
**Credit Hours:** 1-10  
**Min credits per semester:** 1  
**Max credits per semester:** 10  
**Max credits per degree:** 599  
**Format:** IND

FDST 908 Topics in Advanced Food Microbiology  
**Description:** Current topics in food microbiology.  
**Credit Hours:** 2-8  
**Min credits per semester:** 2  
**Max credits per semester:** 8  
**Max credits per degree:** 8  
**Format:** LEC

FDST 908A Food Biotechnology  
**Description:** Microbial genetics and recombinant DNA technology as applied to food science. Includes modification and improvement of microorganisms important in food fermentations; effects of bacteriophages in food fermentations; enzyme engineering; principles of plant and animal tissue culture; bioprocess engineering and down stream processing; DNA probe and monoclonal antibody technology; and regulatory and ethical aspects of biotechnology.  
**Credit Hours:** 2  
**Min credits per semester:** 2  
**Max credits per semester:** 2  
**Max credits per degree:** 2  
**Format:** LEC

FDST 908B Food Borne Pathogens  
**Prerequisites:** FDST 805 (BIOS 845). BIOS 820, or permission. BIOC 831 and 832 recommended  
**Description:** Survey of current research topics in the molecular biology of agents of food borne disease. Includes structure-function analyses of toxin molecules and other virulence determinants; genetic mechanisms of phenotypic variation, coordinate regulation of virulence gene expression; mobile genetic elements that contribute to pathogenesis; invasion of host tissues; and stress-response systems and survival.  
**Credit Hours:** 2  
**Min credits per semester:** 2  
**Max credits per semester:** 2  
**Max credits per degree:** 2  
**Format:** LEC

FDST 908D Food Mycology  
**Description:** Food borne filamentous micro-fungi or molds. Culture media and methods. Techniques for enumerating and identifying molds belonging to the genera Aspergillus, Penicillium, Fusarium, Alternaria, Cladosporium, Rhizopus, Mucor and others. Food spoilage by molds, mycotoxin production and pathological effects.  
**Credit Hours:** 2  
**Min credits per semester:** 2  
**Max credits per semester:** 2  
**Max credits per degree:** 2  
**Format:** LEC

FDST 908E Readings in Food Microbiology  
**Description:** Primarily a literature course that focuses on current topics in food microbiology. Articles from food microbiology, as well as other applied and basic microbiology journals reviewed and discussed. Recent advances in methodology and microbiological techniques emphasized.  
**Credit Hours:** 2  
**Min credits per semester:** 2  
**Max credits per semester:** 2  
**Max credits per degree:** 2  
**Format:** LEC

FDST 908J Gastrointestinal Microbiology  
**Description:** Introduction to the complex microbial populations that inhabit the gastrointestinal tracts of human and non-ruminant animals, and how they impact their hosts. Aspects of gut microbiota having medical or agricultural applications.  
**Credit Hours:** 2  
**Min credits per semester:** 2  
**Max credits per semester:** 2  
**Max credits per degree:** 2  
**Format:** LEC

FDST 951 Advanced Food Science Seminar  
**Description:** Advanced study and discussion of the scientific literature and research pertaining to food science.  
**Credit Hours:** 1-2  
**Min credits per semester:** 1  
**Max credits per semester:** 2  
**Max credits per degree:** 2  
**Format:** LEC

FDST 996 Research in Food Science and Technology  
**Description:** Studies and investigational work relating to chemistry, microbiology, and processing of food products.  
**Credit Hours:** 1-8  
**Min credits per semester:** 1  
**Max credits per semester:** 8  
**Max credits per degree:** 8  
**Format:** IND

FDST 999 Doctoral Dissertation  
**Credit Hours:** 1-24  
**Min credits per semester:** 1  
**Max credits per semester:** 24  
**Max credits per degree:** 99  
**Format:** IND