

FOOD SCIENCE AND TECHNOLOGY (FDST)

FDST 101 Introductory Food Science

Description: Food composition, safety, processing, packaging, labeling, product development, food marketing and related topics.

Credit Hours: 2

Max credits per semester: 2

Max credits per degree: 2

Format: LEC

Prerequisite for: FDST 205; FDST 280

FDST 107 Introduction to the Companion Animal Food Industry

Crosslisted with: ASCI 107

Description: The companion animal food industry, products, processes, and career opportunities.

Credit Hours: 1

Max credits per semester: 1

Max credits per degree: 1

Format: LEC

FDST 131 The Science of Food

Crosslisted with: CHEM 131, NUTR 131

Description: General scientific concepts in biology, chemistry, and physics using food as a model. What food is from both chemical and nutritional perspectives, and the fate of food from when it leaves the farm to when it becomes a part of the individual. Assists students in making intelligent decisions about many food related controversial issues (e.g., food irradiation, food additives, health foods).

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Format: LEC

Prerequisite for: FDST 131L; FDST 205; FDST 280

ACE: ACE 4 Science

FDST 131L Science of Food Lab

Prerequisites: FDST 131 or parallel.

Description: Introduction to laboratory techniques: food chemistry, food biochemistry, food analysis, food safety microbiology, and food fermentation.

Credit Hours: 1

Max credits per semester: 1

Max credits per degree: 1

Format: LAB

FDST 132 Practical Applications in Food Science

Prerequisites: Food science and technology major.

Description: Food processing, preservation, nutrition, safety, quality, marketing, and related topics. Food processing procedures and equipment. Microbiological and chemical procedures.

Credit Hours: 1

Max credits per semester: 1

Max credits per degree: 1

Format: LAB

FDST 205 Food Composition and Analysis

Prerequisites: CHEM 109 and 110; FDST 101 or 131.

Description: Major components of foods, their structures, and their role in the functional and nutritional properties of foods. Chemical methods for the determination and characterization of major food components.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Format: LEC

FDST 280 Contemporary Issues in Food Science

Prerequisites: CHEM 109; FDST 101 or 131.

Description: Current issues in food science, food safety problems, the impact of biotechnology on food production and processing, organic foods, functional foods and other contemporary topics.

Credit Hours: 2

Max credits per semester: 2

Max credits per degree: 2

Format: LEC

FDST 301 Chemistry of Food

Notes: Will not count toward a FDST major.

Description: Emphasizes essential principles of chemistry and their application to food systems. Covers the molecular properties of food components (proteins, carbohydrates, and lipids) and their chemical reactions. Provides understanding of how chemistry impacts food quality and contributes to wellness.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Format: LEC

Offered: SPRING

ACE: ACE 4 Science

FDST 363 Heat and Mass Transfer

Crosslisted with: MSYM 363

Prerequisites: MATH 104 or 106; MSYM 109 or PHYS 141 or 151.

Description: Fundamentals of food engineering including material and energy balances, fluid mechanics, heat transfer and mass transfer.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Format: LEC

FDST 372 Food Safety and Sanitation

Crosslisted with: NUTR 372

Prerequisites: One course in chemistry and one course in biological sciences.

Description: Various factors that result in food illness: food allergy, natural toxins, parasites, microbial and viral food borne infections and food borne intoxications. Students will assess hazards, identify critical control points and establish monitoring and system verification procedures.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Format: LEC

FDST 396 Independent Study in Food Science and Technology

Prerequisites: Permission.

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: 12

Format: IND

FDST 401 Teaching Applications of Food Science

Crosslisted with: FDST 801

Prerequisites: BIOS 101 and CHEM 109

Notes: Will not count toward a FDST major or minor.

Description: Overview of the science of food and how food can be used in the classroom to enhance science education.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Format: LEC

FDST 403 Food Quality Assurance

Crosslisted with: FDST 803

Prerequisites: FDST 205; STAT 218.

Description: Quality related issues as they pertain to manufacturing, processing, and/or testing of foods, with a major emphasis on 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 405 Food Microbiology

Crosslisted with: BIOS 445, BIOS 845, FDST 805

Prerequisites: BIOS 312

Notes: BIOC 401 or BIOC 431 recommended

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

Offered: FALL/SPR

Prerequisite for: BIOS 446, BIOS 846, FDST 406, FDST 806; FDST 415, FDST 815; FDST 425, FDST 825; FDST 455, FDST 855; FDST 455L, FDST 855L; FDST 460, FDST 860; FDST 875; FDST 877; FDST 908B

FDST 406 Food Microbiology Laboratory

Crosslisted with: BIOS 446, BIOS 846, FDST 806

Prerequisites: Parallel in FDST 405/805/BIOS 446/846.

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

Prerequisite for: FDST 415, FDST 815

FDST 412 Cereal Technology

Crosslisted with: FDST 812

Prerequisites: FDST 205.

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 413 Baking Technology

Crosslisted with: FDST 813

Prerequisites: FDST 205

Description: Chemistry and technology of bakery products, including formulation, ingredient functionality, processing, and quality evaluation.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Format: LEC

Offered: FALL

FDST 415 Molds and Mycotoxins in Food, Feed, and the Human Environment

Crosslisted with: FDST 815

Prerequisites: FDST 405/805/BIOS 445/845 and FDST 406/806/BIOS 446/846.

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 419 Meat Investigations

Crosslisted with: ASCI 419, ASCI 819, FDST 819

Prerequisites: ASCI 210

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 420 Fruit and Vegetable Technology

Crosslisted with: FDST 820

Prerequisites: FDST 205.

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 425 Food Toxicology**Crosslisted with:** FDST 825**Prerequisites:** FDST 405/805, BIOC 321, or equivalent.**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 429 Dairy Products Technology****Crosslisted with:** FDST 829**Prerequisites:** FDST 205.**Notes:** Offered spring semester of odd-numbered calendar years.**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 430 Sensory Evaluation****Crosslisted with:** FDST 830, STAT 430, STAT 830**Prerequisites:** Introductory course in statistics.**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 441 Functional Properties of Food****Crosslisted with:** FDST 841, NUTR 441, NUTR 841**Prerequisites:** NUTR 245 and BIOC 321; or FDST 448.**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**Prerequisite for:** NUTR 449**FDST 442 Omnivore's Digestive-Tract Microbiome****Crosslisted with:** FDST 842**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 445 Experimental Foods****Crosslisted with:** FDST 845, NUTR 445, NUTR 845**Prerequisites:** NUTR 244 and 245; BIOC 321.**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:** NUTR 449**FDST 448 Food Chemistry****Crosslisted with:** FDST 848**Prerequisites:** FDST 205; CHEM 251; BIOC 321.**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:** ASCI 917; FDST 449, FDST 849; FDST 452, FDST 852; FDST 458, FDST 858; FDST 460, FDST 860; NUTR 449**FDST 449 Food Chemistry Laboratory****Crosslisted with:** FDST 849**Prerequisites:** FDST 205; FDST 448/848 or parallel; BIOC 321.**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**Prerequisite for:** FDST 458, FDST 858**FDST 451 Food Science and Technology Seminar****Prerequisites:** Permission.**Description:** Student presentations of food science literature and research.**Credit Hours:** 1**Max credits per semester:** 1**Max credits per degree:** 1**Format:** LEC**FDST 452 Physical Chemistry of Foods****Crosslisted with:** FDST 852**Prerequisites:** FDST 448/848 or instructor approval.**Description:** The basic theory of physical chemistry that is relevant in food science and technology. Understand and predict changes occurring in a food during processing, storage, and handling using physical chemistry theory. Design and improvement of processes to make foods having specific qualities in an efficient way.**Credit Hours:** 2**Max credits per semester:** 2**Max credits per degree:** 2**Format:** LEC

FDST 455 Microbiology of Fermented Foods

Crosslisted with: FDST 855

Prerequisites: FDST 405/805

Notes: On-campus students must also register for FDST 455L/855L.

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.

Credit Hours: 2

Max credits per semester: 2

Max credits per degree: 2

Format: LEC

FDST 455L Microbiology of Fermented Foods Laboratory

Crosslisted with: FDST 855L

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 458 Advanced Food Analysis

Crosslisted with: FDST 858

Prerequisites: FDST 205, 448/848, and FDST 449/849.

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 460 Food Product Development Concepts I

Crosslisted with: FDST 860

Prerequisites: FDST 405/805 and FDST 448/848.

Notes: Capstone course.

Description: Develop a commercially viable food product using chemical, microbiological and sensory analysis principles, and marketing and packaging sciences.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Format: LEC

ACE: ACE 10 Integrated Product

FDST 465 Food Engineering Unit Operations

Crosslisted with: FDST 865, MSYM 465, MSYM 865

Prerequisites: FDST/MSYM 363.

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 470 Nutraceuticals and Functional Foods

Crosslisted with: FDST 870

Prerequisites: BIOC 321 or BIOC/BIOS/CHEM 431/831.

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 490 Food Industry Experience

Prerequisites: Junior or senior standing and permission.

Notes: Required seminars/discussions to be completed prior to the internship. At the completion of the internship, a written report of the experience and a seminar presentation of the same material is required.

Description: Obtain a working knowledge of the food industry and begin developing professional credentials.

Credit Hours: 1-3

Min credits per semester: 1

Max credits per semester: 3

Max credits per degree: 3

Format: LEC

FDST 499H Honors Thesis

Prerequisites: Admission to the University Honors Program and permission, AGRI 299H recommended.

Description: Conduct a scholarly research project and write a University Honors Program or undergraduate thesis.

Credit Hours: 3-6

Min credits per semester: 3

Max credits per semester: 6

Max credits per degree: 6

Format: IND