

# FSTC - FOOD SCIENCE & TECH (FSTC)

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## FSTC 201 Food Science

**Credits 3. 3 Lecture Hours.**

(AGRI 1329) Food Science. The fundamental biological, chemical and physical scientific principles associated with the study of foods; topics include food composition and nutrition, food additives and regulations, food safety and toxicology, food processing, food engineering, food biotechnology, product development and sensory evaluation.

## FSTC 204/NUTR 204 Perspectives in Nutrition and Food Science

**Credit 1. 1 Lecture Hour.**

Current trends in the fields of nutrition and food science; critical review relevant literature in these fields ranging from popular press to peer-reviewed research; study of original research and market trends in understanding food, food processing, nutrients, health and diseases.

**Prerequisites:** NUTR and FSTC majors.

**Cross Listing:** NUTR 204/FSTC 204.

## FSTC 210/NUTR 210 Horizons in Nutrition and Food Science

**Credits 2. 2 Lecture Hours.**

Introduction to nutrition and food science career opportunities through presentations by nutrition and food science researchers and industry professionals; addresses issues of professionalism including portfolio development, teamwork, and critical thinking skills.

**Cross Listing:** NUTR 210/FSTC 210.

## FSTC 285 Directed Studies

**Credits 0 to 4. 0 to 4 Other Hours.**

Directed study of selected problems in the area of food science.

**Prerequisites:** Approval of instructor; 2.0 GPR in major and overall.

## FSTC 289 Special Topics in...

**Credits 1 to 4. 1 to 4 Lecture Hours.**

Selected topics in an identified area of food science and technology. May be repeated for credit.

**Prerequisite:** Approval of instructor.

## FSTC 291 Research

**Credits 0 to 4. 0 to 4 Other Hours.**

Research conducted under the direction of faculty member in food science and technology. May be repeated 2 times for credit.

**Prerequisites:** Freshman or sophomore classification and approval of department head.

## FSTC 300/NUTR 300 Religious and Ethnic Foods

**Credits 3. 3 Lecture Hours.**

Understanding religious and ethnic foods with application to product development, production, and nutritional practices; emphasis on different food rules and priorities with attention given to different religious and ethnic groups within the US and around the world.

**Prerequisites:** Junior or senior classification or approval of instructor; basic knowledge of food science and nutrition helpful.

**Cross Listing:** NUTR 300.

## FSTC 305 Fundamental Baking

**Credits 3. 2 Lecture Hours. 3 Lab Hours.**

Fundamentals of baking; chemical and physical properties of ingredients, methods of baking all products, fundamental reactions of dough, fermentation and oven baking.

**Prerequisite:** CHEM 222 or CHEM 227 or approval of department head.

## FSTC 307/ANSC 307 Meats

**Credits 3. 2 Lecture Hours. 3 Lab Hours.**

Integrated studies of the meat animal processing sequence regarding the production of meat-type animals and the science and technology of their conversion to human food.

**Prerequisites:** Grade of C or better in ANSC 111 and ANSC 113; junior classification or approval of instructor.

**Cross Listing:** ANSC 307/FSTC 307.

## FSTC 311 Principles of Food Processing

**Credits 3. 2 Lecture Hours. 3 Lab Hours.**

Principles and practices of canning, freezing, dehydration, pickling and specialty food manufacture; fundamental concepts of various techniques of preparation, processing, packaging and use of additives; processing plants visited.

**Prerequisite:** FSTC 201; junior or senior classification or approval of department head or instructor.

## FSTC 312 Food Chemistry

**Credits 3. 3 Lecture Hours.**

The fundamental and relevant chemistry and functionality of the major food constituents (water, carbohydrates, lipids, proteins, phytochemical nutraceuticals) and study of food emulsion systems, acids, enzymes, gels, colors, flavors and toxins.

**Prerequisite:** FSTC 201; CHEM 227; CHEM 237 or approval of department head or instructor.

## FSTC 313 Food Chemistry Laboratory

**Credit 1. 3 Lab Hours.**

Laboratory exercises investigating specific molecules, such as food acids, enzymes, pigments and flavors, and chemical interactions in foods, such as oxidation reactions, emulsion systems, and functional properties from a fundamental chemistry rather than an analytical perspective.

**Prerequisite:** FSTC 201; CHEM 227; CHEM 237 or approval of department head or instructor.

## FSTC 314 Food Analysis

**Credits 3. 1 Lecture Hour. 4 Lab Hours.**

Selected standard methods for assay of food components; principles and methodology of both classical and instrumental techniques for food analysis.

**Prerequisite:** FSTC 201; FSTC 311; CHEM 227; CHEM 237 or approval of department head or instructor.

## FSTC 315/AGSM 315 Food Process Engineering Technology

**Credits 3. 2 Lecture Hours. 2 Lab Hours.**

Elementary mechanics, physical and thermal properties of food and processing materials, heat transfer, mass and energy balances, psychrometrics (properties of air), insulation.

**Prerequisites:** Grade of C or better in PHYS 201 or PHYS 206, or approval of instructor.

**Cross Listing:** AGSM 315/FSTC 315.

## FSTC 320/NUTR 320 Understanding Obesity - A Social and Scientific Challenge

**Credits 3. 3 Lecture Hours.**

Perspectives of obesity in food science, nutrition, health and psychology; study of obesity factors in relation to genetics, exercise physiology and sociology with emphasis on food and nutrition.

**Prerequisites:** Junior or senior classification or approval of instructor.

**Cross Listing:** NUTR 320/FSTC 320.

**FSTC 324 Food Safety and Preventive Controls for Human Food****Credits 3. 3 Lecture Hours.**

Microbiological food spoilage, fermentation and safety; U.S. Food and Drug Administration (FDA) recognized curriculum for "preventive controls qualified individual" within the FDA Hazard Analysis and Risk-based Preventive Controls for Human Food regulation.

**Prerequisites:** Junior or senior classification or approval of instructor.

**FSTC 326/ANSC 326 Food Bacteriology****Credits 3. 3 Lecture Hours.**

Microbiology of human foods and accessory substances; raw and processed foods; physical, chemical and biological phases of spoilage; standard industry techniques of inspection and control.

**Prerequisite:** Junior or senior classification or approval of instructor.

**Cross Listing:** ANSC 326/FSTC 326.

**FSTC 327/ANSC 327 Food Bacteriology Lab****Credit 1. 3 Lab Hours.**

Laboratory to accompany ANSC 326/FSTC 326 or FSTC 326/ANSC 326.

**Cross Listing:** ANSC 327/FSTC 327.

**FSTC 330 Dairy and Food Technology****Credits 4. 3 Lecture Hours. 3 Lab Hours.**

Principles and practices involved in processing of milk into market milk, butter, cheese and cheese foods; fundamental principles of these processes as related to their design and control.

**FSTC 331 Dairy and Food Technology****Credits 4. 3 Lecture Hours. 3 Lab Hours.**

Manufacture of frozen, freeze-dehydrated, concentrated and dehydrated dairy foods; fundamental aspects of freezing, concentration and dehydration of foods.

**Prerequisite:** FSTC 330 or approval of department head.

**FSTC 401 Food Product Development****Credits 3. 2 Lecture Hours. 3 Lab Hours.**

Design and develop food products using principles of food chemistry, food processing, nutrition, sensory analysis and statistics; team collaborate to improve food product characteristics to meet the needs of a changing society.

**Prerequisites:** FSTC 201, FSTC 311, FSTC 312, FSTC 313, FSTC 314, FSTC 315/AGSM 315, FSTC 326/ANSC 326, or concurrent enrollment; senior classification or approval of instructor.

**FSTC 405/POSC 405 Egg and Poultry Meat Processing****Credits 3. 3 Lecture Hours.**

Principles of egg and poultry meat processing, understanding egg and poultry meat markets, egg and meat grading, product safety, packaging and consumer acceptance of shell eggs and poultry meat, specifically turkey and broilers.

**Prerequisites:** Junior or senior classification or approval of instructor.

**Cross Listing:** POSC 405/FSTC 405.

**FSTC 406/POSC 406 Poultry Further Processing****Credits 4. 3 Lecture Hours. 2 Lab Hours.**

Science and practice of value-added products; physical, chemical, microbiological and functional characteristics of value-added poultry products as they affect consumer acceptance, efficiency of production and regulatory approval.

**Prerequisites:** CHEM 222; DASC 326 or FSTC 326/ANSC 326; POSC 309; POSC 405/FSTC 405; junior or senior classification or approval of instructor.

**Cross Listing:** POSC 406/FSTC 406.

**FSTC 410/NUTR 410 Nutritional Pharmacometrics of Food Compounds****Credits 3. 3 Lecture Hours.**

Nutritional pharmacokinetics and pharmacodynamics of food compounds; specific examples of toxicological and pharmacological effects of food compounds.

**Prerequisites:** NUTR 201, NUTR 202, NUTR 203, CHEM 222, or CHEM 227, or approval of instructor; junior or senior classification.

**Cross Listing:** NUTR 410/FSTC 410.

**FSTC 417/AGSM 417 Food Process Engineering Technology II****Credits 3. 3 Lecture Hours.**

Applications of basic engineering concepts to understand common unit operations in the food (and related) industry.

**Prerequisites:** AGSM 315/FSTC 315 or FSTC 315/AGSM 315; approval of instructor.

**Cross Listing:** AGSM 417/FSTC 417.

**FSTC 420 Supervised Research in Mediterranean Nutrition and Food Processing in Italy****Credits 3. 3 Other Hours.**

Exploration of principles of Mediterranean diet, European nutrition regulatory aspects, wine-making and food processing in Italy.

**Prerequisites:** FSTC 201, NUTR 202, or NUTR 203; must be 18 years of age; class and tours taught in English; priority given to majors in FSTC or NUTR.

**FSTC 422 Food Processing for Sustainable Nutrition in Brazil****Credits 3. 3 Other Hours.**

Sustainable nutrition and food processing in Brazil; hands-on learning at the Federal University of Vicosa, the Amazon Biotechnology Center, food processing plants and other research centers in the Amazon, central Brazil and Rio De Janeiro.

**Prerequisites:** FSTC 201, NUTR 202, or NUTR 203; must be 18 years of age; class and tours taught in English; priority given to majors in FSTC or NUTR.

**FSTC 444 Fundamentals of Food Law****Credits 3. 3 Lecture Hours.**

History, development of, and fundamental principles behind current food regulations, including food labeling, adulteration, food safety, food additives, dietary supplements, and import and export laws; overview of government agency jurisdiction, international law and ethics.

**Prerequisite:** FSTC 201; junior or senior classification.

**FSTC 446/HORT 446 Commercial Fruit and Vegetable Processing****Credits 3. 2 Lecture Hours. 3 Lab Hours.**

Pilot plant and laboratory operations pertaining to processed fruits, vegetables and beverages; new product development emphasized via individual laboratory projects.

**Prerequisite:** FSTC 311.

**Cross Listing:** HORT 446/FSTC 446.

**FSTC 457/ANSC 457 Hazard Analysis and Critical Control Point System****Credits 3. 3 Lecture Hours.**

Hazard Analysis and Critical Control Point (HACCP) principles specifically related to meat and poultry; microbiological and process overviews; good manufacturing practices and standard operating procedures development.

**Prerequisite:** FSTC 326/ANSC 326 or ANSC 326/FSTC 326, or approval of instructor.

**Cross Listing:** ANSC 457/FSTC 457.

**FSTC 470/ANSC 470 Quality Assurance for the Food Industry****Credits 3. 3 Lecture Hours.**

Principles of food system process control including statistical process control (SPC) and the tools required to assure uniform communication and understanding of quality assurance systems.

**Prerequisite:** Junior or senior classification.**Cross Listing:** ANSC 470/FSTC 470.**FSTC 481 Seminar****Credit 1. 1 Lecture Hour.**

Guidelines and practice in journal article review and making effective technical presentations; strategies for conducting a job search; development of résumés and letters and interviewing targeted for careers in the food industry or graduate school.

**Prerequisite:** Senior classification in food science and technology.**FSTC 485 Directed Studies****Credits 0 to 4. 0 to 4 Other Hours.**

Directed study on selected problems in the area of food science not covered in other courses.

**Prerequisites:** Junior or senior classification; approval of department head; 2.0 GPR in major and overall.**FSTC 487/ANSC 487 Sensory Evaluation of Foods****Credits 3. 2 Lecture Hours. 2 Lab Hours.**

Application of sensory science principles and practices to food systems including an understanding of discriminative, descriptive and consumer sensory techniques.

**Prerequisites:** CHEM 222 or CHEM 228; junior or senior classification.**Cross Listing:** ANSC 487/FSTC 487.**FSTC 489 Special Topics in...****Credits 1 to 4. 1 to 4 Other Hours.**

Selected topics in an identified area of food science and technology. May be repeated for credit.

**Prerequisite:** Junior or senior classification.**FSTC 491 Research****Credits 0 to 4. 0 to 4 Other Hours.**

Research conducted under the direction of a faculty member in food science. May be repeated 3 times for credit. Registration in multiple sections of this course are possible within a given semester provided that the per semester credit hour limit is not exceeded.