FSTC - FOOD SCIENCE & TECH (FSTC)

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 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. 

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 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 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: ANSC 107 and 108 or approval of department head.

FSTC 311/HORT 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.
Cross Listing: HORT 311/FSTC 311.

FSTC 312/DASC 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.
Cross Listing: DASC 312/FSTC 312.

FSTC 313/DASC 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.
Cross Listing: DASC 313/FSTC 313.

FSTC 314/DASC 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 in food analysis.
Prerequisite: FSTC 201; FSTC 311/HORT 311; CHEM 227; CHEM 237 or approval of department head or instructor.
Cross Listing: DASC 314/FSTC 314.

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: PHYS 201 or PHYS 218, or approval of instructor.
Cross Listing: AGSM 315/FSTC 315.

FSTC 326/DASC 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: BIOL 206 or approval of instructor; junior or senior classification.
Cross Listing: DASC 326/FSTC 326.

FSTC 327/DASC 327 Food Bacteriology Lab
Credit 1. 3 Lab Hours.
Laboratory to accompany FSTC 326/DASC 326.
Cross Listing: DASC 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/HORT 311, FSTC 312/DASC 312, FSTC 313/DASC 313, FSTC 314/DASC 314, FSTC 315/AGSM 315, FSTC 326/DASC 326 or registration therein; 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/FSTC 326/FSTC 326/DASC 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 202 or NUTR 203 or FSTC 201 or 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.  
**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.  
**Prerequisite:** 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.  
**Cross Listing:** NUTR 420.

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 Vicoasa, 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.  
**Cross Listing:** NUTR 422.

FSTC 440/NUTR 440 Therapeutic Microbiology: Probiotics and Related Strategies  
**Credits 3. 3 Lecture Hours.**  
Topics relevant to alimentary (gastrointestinal) microbiology including (i) the "normal" intestinal microbiota; (ii) probiotic and prebiotic nutritional supplements; (iii) recombinant pharamabiotics; (iv) gut-associated lymphoid tissue and mucosal immunity; (v) foodborne gastrointestinal pathogens; and (vi) fermented products as functional foods.  
**Prerequisites:** Undergraduate survey course in microbiology or approval of instructor; junior or senior classification.  
**Cross Listing:** NUTR 440/FSTC 440.

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/HORT 311.  
**Cross Listing:** HORT 446/FSTC 446. (Offered in even numbered years.)

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/DASC 326 or approval of instructor.  
**Cross Listing:** ANSC 457/FSTC 457.

FSTC 469/NUTR 469 Experimental Nutrition and Food Science Laboratory  
**Credits 4. 1 Lecture Hour. 6 Lab Hours.**  
Investigation of nutritional intervention in animal models of metabolic and psychological disorders (e.g. obesity and depression); investigational approaches such as behavioral analyses; RNA and protein analyses; reverse transcription PCR.  
**Prerequisites:** CHEM 227; CHEM 237; junior or senior classification or approval of instructor.  
**Cross Listing:** NUTR 469/FSTC 469.
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 471/NUTR 471 Critical Evaluation of Nutrition and Food Science Literature: Evidence Based Reviews
Credits 3. 3 Lecture Hours.
Evaluation of scientific literature, research methods within the literature, and the quality of scientific studies to produce an evidence-based review in areas specific to nutrition and food science.
Prerequisites: NUTR 202 or NUTR 203 and STAT 302; junior or senior classification; knowledge of technical writing helpful.
Cross Listing: NUTR 471/FSTC 471.

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

FSTC 491 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 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.