

# FSTC - FOOD SCIENCE & TECH

## FSTC 605 Chemistry of Foods

**Credits 3. 3 Lecture Hours.** Chemical covalent and noncovalent interactions in food systems; the glass transition and moisture in foods; carbohydrate chemistry; reactions of food lipids; food protein functionality; chemistry of flavor; processing chemistry; food additives; and nutraceutical phytochemicals. **Prerequisite:** BICH 410 or BICH 603.

## FSTC 606/DASC 606 Microbiology of Foods

**Credits 3. 3 Lecture Hours.** Nature and function of beneficial and defect-producing bacteria in foods; food-borne illness, effects of processing, storage and distribution; techniques for isolation and identification from foods. **Cross Listing:** DASC 606/FSTC 606.

## FSTC 607/ANSC 607 Physiology and Biochemistry of Muscle as a Food

**Credits 3. 3 Lecture Hours.** Biochemical, histological, anatomical and physical characteristics of muscle cells and factors associated with transformation of muscle cells into meat. **Prerequisite:** BICH 410 or approval of instructor. **Cross Listing:** ANSC 607/FSTC 607.

## FSTC 610/NUTR 610 Nutritional Pharmacometrics of Food Compounds

**Credits 3. 3 Lecture Hours.** Introduction into nutritional pharmacokinetics and pharmacodynamics of food compounds; specific examples of toxicological and pharmacological effects of food compounds. **Prerequisite:** NUTR 202, NUTR 203, FSTC 201, CHEM 227, or CHEM 222, or instructor approval. **Cross Listing:** NUTR 610/FSTC 610.

## FSTC 616 Food Biomanufacturing and Cellular Agriculture

**Credits 3. 3 Lecture Hours.** Basic principles and techniques of food biomanufacturing, including bioprocessing, fermentation science, cellular agriculture, space food, and molecular farming, by addressing bioprocessing, microbial community, bacterial and yeast-based fermentation, bioreactors, cellular agriculture technologies, enzymes applications in food production, and sustainability; introduction to the concepts of cellular agriculture, fermentation and precision fermentation, bioprocessing, different bioreactors, and life cycle analysis roles in making decisions about the final products; learning to read papers to develop protocols and how to modify them; understanding of upstream and downstream processing, which will cover the bacterial, and yeast-based fermentation, precision fermentation, cellular agriculture, bioprocessing and food safety aspects of these products; biomanufacturing applications for different products developed from plants, insects, algae, and animals' byproducts. **Prerequisites:** Graduate classification.

## FSTC 619 Molecular Methods for Microbial Characterization

**Credits 3. 2 Lecture Hours. 2 Lab Hours.** Underlying principles of molecular methods for microbial detection and characterization in natural and man-made ecosystems; emphasis on method application and data interpretation; emphasis on microbial pathogens and indicator organisms in foods and environment; laboratory covers select protocols. **Prerequisites:** FSTC 326/ANSC 326; SCSC 405; POSC 429; approval of instructor. **Cross Listing:** SCSC 619, POSC 619, and VTMI 619.

## FSTC 629/POSC 629 Microbiology of Food Irradiation

**Credits 3. 2 Lecture Hours. 2 Lab Hours.** Lecture plus laboratory overview of electron beam and x-ray based food irradiation principles; provides a working knowledge of using electronic pasteurization as a means of destroying microbial pathogens or retarding microbial spoilage in foods. **Cross Listing:** POSC 629/FSTC 629.

## FSTC 631 Food Carbohydrates

**Credits 3. 3 Lecture Hours.** Chemistry, structure, functionality and nutritional properties of food carbohydrates; fiber chemistry, functionality and nutritional properties, artificial sweeteners, starch structure and functionality and hydrocolloid functionality. **Prerequisite:** BICH 410.

## FSTC 632 Innovative Functional Food Ingredients

**Credits 3. 3 Lecture Hours.** Exploration of the impact of functional food ingredients on human health and the microbiome, processing, quality control, and regulatory compliance under FDA and FTC guidelines. **Prerequisites:** Graduate classification.

## FSTC 647/ANSC 647 Technology of Meat Processing and Distribution

**Credits 3. 3 Lecture Hours.** Quantitative and qualitative characteristics of meat and meat products as related to food technology processing operations; manufacturing, preservation, packaging and merchandising. **Cross Listing:** ANSC 647/FSTC 647.

## FSTC 657/ANSC 657 Hazard Analysis and Critical Control Point System

**Credits 3. 3 Lecture Hours.** Examination of the Hazard Analysis and Critical Control Point (HACCP) principles specifically related to meat and poultry; microbiological and process overviews; good manufacturing practices (GMP) and standard operating procedures (SOP) development; team-building and implementation into industry operations. This class is designed for the production of food and fulfills the training requirements of USDA's HACCP regulation for meat and poultry (9 CFR Part 417), and FDA's HACCP regulations for fish and fishery products (21 CFR Part 123 and 1240) and for juice (21 CFR Part 120). **Cross Listing:** ANSC 657/FSTC 657.

## FSTC 664 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. **Prerequisites:** Graduate classification.

## FSTC 667/ANSC 667 Industrial Processed Meat Operations

**Credits 3. 2 Lecture Hours. 2 Lab Hours.** Application of scientific principles and business practices to manufactured meat products; interrelationships among marketing, manufacturing, product development, regulatory compliance and quality assurance in commercial processed meat operations. **Prerequisite:** Approval of instructor. **Cross Listing:** ANSC 667/FSTC 667.

## FSTC 670 Quality Assurance for the Food Industry

**Credits 3. 3 Lecture Hours.** Principles of food system process control; statistical process control (SPC); tools required to assure uniform communication and understanding of quality assurance systems. **Prerequisite:** Graduate classification. **Cross Listing:** ANSC 670/FSTC 670.

## FSTC 681 Seminar

**Credits 0-1. 0-1 Other Hours.** Oral reports and discussions of current research and developments in food science and technology designed to broaden understanding of problems and to stimulate research.

## FSTC 684 Professional Internship

**Credits 0 to 16. 0 to 16 Other Hours.** Experience in application of formal training to a commercial operation under supervision of operations manager and designated faculty member; investigation of matter of mutual interest and report results in a professional paper approved by the graduate committee.

## FSTC 685 Directed Studies

**Credits 0 to 4. 0 to 4 Other Hours.** Directed study of selected problems emphasizing recent developments in research techniques.

## FSTC 687/ANSC 687 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. **Prerequisite:** CHEM 222 or CHEM 228. **Cross Listing:** ANSC 687/FSTC 687.

## FSTC 689 Special Topics in...

**Credits 1 to 4. 1 to 4 Other Hours.** Special topics in an identified area of food science and technology. May be repeated for credit.

## FSTC 691 Research

**Credits 1 to 23. 1 to 23 Other Hours.** Investigations leading to thesis or dissertation in various areas of food science and technology.

## FSTC 697/ANSC 697 Applied Microbiology for Foods of Animal Origin: Processing, Sanitation and Sanitary Design

**Credits 3. 3 Lecture Hours.** Application of basic food microbiology knowledge and principles to food production processes and products; sources of microbiological contamination and their impact on food safety and spoilage; application of sanitary design and validation; testing and auditing to monitor and trouble-shoot the process. **Prerequisites:** DASC 326 or FSTC 326/ANSC 326, or FSTC 606/DASC 606, or equivalent. **Cross Listing:** ANSC 697/FSTC 697.