

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 611/POSC 611 Advanced Egg & Poultry Meat Processing

Credits 3. 3 Lecture Hours. Advanced Egg & Poultry Meat Processing. Focuses on egg markets, egg processing, grading, packaging, safety, quality and consumer acceptance of shell eggs; poultry meat processing (specifically turkeys and broilers), meat quality, markets, consumer acceptance of poultry meat and safety. **Prerequisite:** Graduate classification. **Cross Listing:** POSC 611/FSTC 611.

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 623 Nanotechnology in Food Processing

Credits 3. 3 Lecture Hours. Fundamental and applied knowledge related to nanoscale systems and technologies utilized in processing of foods; includes nanoscale physico-chemical properties of foods, applications, manufacture and analysis of nanotechnologies for food processing and preservation; relevant industrial and regulatory food nanotechnology associated aspects. **Prerequisites:** FSTC 312, FSTC 313, FSTC 315/AGSM 315, or AGSM 315/FSTC 315, or equivalent coursework, or approval of instructor.

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 630 Cereal Grains for Human Food

Credits 4. 3 Lecture Hours. 3 Lab Hours. Fundamental concepts of dry milling, wet milling, oil extraction, baking, malting, brewing, storage, sanitation and quality evaluation and control interrelated with physical and biochemical properties of cereals and their products; use of instruments and techniques to evaluate cereal quality. **Prerequisite:** Approval of instructor.

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 634 Oilseed Proteins for Foods

Credits 3. 3 Lecture Hours. World production, composition, processing technologies, uses of products (oil, meal, protein concentrates and isolates, and texturized products) in feeds and foods; present and potential food applications of oilseed proteins. **Prerequisites:** CHEM 228 and CHEM 317.

FSTC 635 Oil and Fat Food Products

Credits 3. 3 Lecture Hours. Composition, properties and reactions; sources, handling and storage of raw materials; extraction refining and bleaching; hydrogenation, deodorization, esterification and interesterification; fractionation; uses in salad oils, shortenings, margarine, bakery products and other foods. **Prerequisites:** CHEM 228 and CHEM 317.

FSTC 640 Therapeutic Microbiology I

Credits 3. 3 Lecture Hours. Alimentary (gastrointestinal) microbiology including (i) the "normal" intestinal microbiota; (ii) probiotic and prebiotic nutritional supplements; (iii) recombinant pharmabiotics; (iv) gut-associated lymphoid tissue and mucosal immunity; (v) foodborne gastrointestinal pathogens; and (vi) fermented products as functional foods. **Prerequisite:** Undergraduate survey course in microbiology or approval of instructor.

FSTC 644 Disease Mechanisms of Foodborne Pathogens

Credits 3. 3 Lecture Hours. Principles of pathogenicity of foodborne bacteria; mechanisms used by disease-causing bacteria leading to human illness; basic principles of immunology and human and bacterial physiology; investigation of bacterial virulence factors and effects of stress response, quorum sensing and other external factors. **Prerequisite:** FSTC 326/ANSC 326 or BIOL 351, or approval of instructor.

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 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 671/NUTR 671 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; STAT 302; knowledge of nutrition, statistics, and technical writing helpful. **Cross Listing:** NUTR 671/FSTC 671.

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.