Food Science (FSC) Courses

FSC3010 Food Quality Assurance
Principles of quality management as they pertain to manufacturing, processing, and/or testing of foods, with a major emphasis on food regulations, food plant sanitation and Hazard Analysis of Critical Control Points. Food quality assessment methods, good manufacturing practices and statistical process controls are discussed.
Prerequisite(s): FSM1165 or approved sanitation certificate, junior status.
Offered at Charlotte
3 Semester Credits

FSC3020 Food Chemistry
Food chemistry applies basic scientific principles to food systems and practical applications. Chemical/biochemical reactions of carbohydrates, lipids, proteins and other constituents in fresh and processed foods are discussed in respect to food quality. Reaction conditions and processes that affect color, flavor, texture, nutrition and safety of food are emphasized. Laboratory experiments reinforce class discussions. These include activation and control of non-enzymatic browning and food emulsions. This course is conducted within both a lecture and laboratory environment.
Prerequisite(s): CHM2040 (or concurrent), junior status.
Offered at Charlotte
3 Semester Credits

FSC3040 Food Ingredients & Formulations
This course applies food science principles to ingredient substitutions in food products. Students explore practical applications of various carbohydrate, lipid and protein food ingredients and their impact in food systems. Legal and regulatory restrictions in respect to ingredients, package materials, processes and labeling statements are introduced. Laboratory procedures for standard formulations and instrumental evaluation, with an emphasis on problem solving and critical thinking, are studied in a laboratory setting.
Prerequisite(s): Junior status.
Offered at Charlotte
3 Semester Credits

FSC3050 Fermentation Science & Functional Foods
This course explores various fermented food systems with particular emphasis on their development and continued manufacturing. Additionally, this course covers a range of functional foods and food components, their health conferring benefits, mechanisms of actions, and possible applications in the food industry.
Prerequisite(s): Junior status.
Offered at Charlotte
3 Semester Credits

FSC3060 Principles of Food Microbiology
This course introduces students to various aspects of food microbiology, organisms associated naturally with foods and those responsible for spoilage. The role and significance of food microorganisms including food pathogens are discussed. Additionally, students investigate various sources of contamination and the influence of food formulation and processing on microbial growth. Control techniques and methodology to detect and enumerate microorganisms in food products are studied.
Prerequisite(s): BIO2201, BIO2206, Corequisite: FSC3065, junior status.
Offered at Charlotte
3 Semester Credits

FSC3065 Principles of Food Microbiology Laboratory
This course is the laboratory companion for Principles of Food Microbiology. The laboratory focuses on practical application of microbiological principles to food and food ingredients. Students develop skills in using commonly employed microbiological techniques in research laboratories and quality control. Emphasis is on investigating food contamination, the techniques and methods to detect and enumerate microorganisms, and evaluating the efficacy of control efforts.
Prerequisite(s): BIO2201, BIO2206, Corequisite: FSC3060, junior status.
Offered at Charlotte
1.5 Semester Credits

FSC4010 Sensory Analysis
Application of sensory science principles and practices to food and beverage systems including an understanding of consumer sensory techniques and the use of various instrumental testing methods.
Prerequisite(s): FSC3020, MATH2001, junior status.
Offered at Charlotte
3 Semester Credits

FSC4020 Principles of Food Processing
Principles and practices of food processing including, extrusion, canning, freezing, dehydration, aseptic packaging, fresh ready to eat and specialty food manufacturing. Understanding of various preparations, processing and packaging techniques including the use of additives. The course exposes students to various manufacturing equipment and explores raw material control, disposal of waste products and the use of re-work in a manufacturing setting.
Prerequisite(s): FSC3020, FSC3040, senior status.
Offered at Charlotte
3 Semester Credits

FSC4040 Product Research & Development
This senior-level capstone class builds on and applies knowledge learned in previous food science & technology major courses. This laboratory based class will expose students to the product development process from concept through product optimization. Students learn the importance of teamwork in a R&D laboratory classroom. They will develop a consumer food product which meets predefined nutritional, performance, regulatory and shelf-life expectations. ESHA Genesis R&D software will be used to enter formulations and design nutritional and ingredient labels.
Prerequisite(s): FSC3020, FSC4020, senior status.
Offered at Charlotte
3 Semester Credits