Food Safety and Hazard Analysis Critical Control Point Program
Spring. 3(3-0) Interdepartmental with Biological Sciences. Administered by Biological Sciences. P.M. FSC 325 and (MTH 126 or LBS 211) R.B. FSC 211, SA: FE 329
Unit operations in food industry: fluid mechanics, heat transfer, rate processes, refrigeration, freezing, and dehydration. Thermal process calculations.

Food Safety and Human Nutrition
Fall. 3(2-4) P.M.: FSC 211 and (MTH 126 or LBS 211) R.B. FSC 339
Principles, technologies, and applications in conversion of raw products into high quality foods. Unit operations: thermal processing, irradiation, freezing, membrane fractionation, enzyme technologies, dehydration and refrigeration.

Food Chemistry
Fall. 3(3-0) P.M.: BMB 200 or CEM 352 or (BMB 401 or concurrently) R: Not open to freshmen or sophomores. Organic and biological reactions of food constituents. Chemical changes in foods during processing and storage affecting texture, color, flavor, stability, and nutritive qualities.

Food Chemistry Laboratory
Fall. 1(0-3) P.M.: (FSC 401 or concurrently) and completion of Tier I writing requirement
Chemical changes in food constituents which affect stability of food products and properties such as color, flavor and texture.

Quality Assurance
Fall. 2(2-0) P.M.: (STT 200 or STT 201 or STT 231 or STT 315 or STT 351) and (FSC 211 or concurrently) or (ANS 210 or concurrently) or (HRT 204 or concurrently) R: Open only to juniors or seniors or graduate students in the Department of Food Science and Human Nutrition or in the Food Processing and Technology Specialization. Theory and application of quality assurance programs for food processing industries.

Food Laws and Regulations
Spring. 3(3-0) P.M.: HNF 150 or HNF 311 or FSC 211 or FIM 100
Adoption, interpretation, and enforcement of laws and regulations governing food processing and foodservice systems. Impact of regulation on food production, availability, marketing, and safety.

Functional Foods and Human Health
Spring. 3(3-0) P.M.: HNF 150 or (HNF 311 or concurrently) and (MMG 205 or MMG 301 or FSC 342) and ((BMB 200 or concurrently) or (BMB 401 or concurrently))

Food Processing: Cereals
Spring. 3(3-0) P.M.: FSC 211 R: Not open to freshmen or sophomores. SA: FSC 331

Food Processing: Dairy Foods
Spring. 3(3-0) P.M.: FSC 211 and ANS 210 R: Not open to freshmen or sophomores. SA: FSC 332
Principles for production and processing of safe and wholesome dairy foods. Practical experience in safety and quality assurance systems and in the processing of fluid milk, cultured products, cheese, and frozen desserts.

Food Processing: Muscle Foods
Fall. 3(3-0) P.M.: FSC 211 or ANS 210 R: Not open to freshmen or sophomores. SA: FSC 333
Manufacturing practices and principles of fresh, frozen, and cured meats and fish. Processed products from muscle foods. Egg characteristics. Product formulation and quality control.

Food Microbiology
Spring. 3(3-0) Interdepartmental with Microbiology and Molecular Genetics, Administered by Food Science. P.M.: (MMG 201 or MMG 301) and completion of Tier I writing requirement. R: Not open to freshmen. SA: MPH 440
Major groups of microorganisms of importance to the food industry. Ecological, physiological, and public health aspects.

Food Analysis
Fall. 3(2-3) P.M.: (BMB 200 or (BMB 401 or concurrently) and completion of Tier I writing requirement
Principles and application of analytical techniques. Analysis for fats, proteins, carbohydrates, minerals, vitamins, and additives. Techniques include spectroscopy, fluorometry, chromatography, electrophoresis, and proximate composition.

Integrated Approaches to Food Product Development
Fall. 3(2-3) P.M.: (FSC 402 or concurrently) or (FSC 441 or concurrently) or (FSC 455 or concurrently) R.B: FSC 325 and BE 329 R: Open only to seniors or graduate students. Food product development including obtaining, screening, and selecting ideas. Integration of food processing, chemistry, analysis, and microbiology for the design, production, and evaluation of a food product.

Food Engineering: Fluids
Fall. 3(2-2) Interdepartmental with Biosystems Engineering. Administered by Biosystems Engineering. P.M.: BE 350 and BE 351 SA: FE 455
Unit operations, process engineering, equipment, and industrial practices of the food industry. Manufactured dairy products: thermal processing, pipeline design, heat exchange, evaporation, dehydration, aseptic processing, membrane separation, cleaning, and sanitation.

Special Problems in Food Science
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Not open to freshmen or sophomores. Approval of department; application required.
Individual study of selected topics in food science. Supervised independent study.

Professional Internship in Food Science
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. A student may earn a maximum of 6 credits in all enrollments for any or all of these courses: ABM 493, AEE 493, ANR 493, ANS 493, CSS 493, EEP 493, FSC 493, FIM 493, FW 493, HRT 493, PKG 493, PLP 493, PRR 493, and RD 493. R: Open only to juniors or seniors in Food Science. Approval of department; application required.
Supervised professional experiences in agencies and businesses related to food science.
807 Advanced Food Toxicology
Fall of even years. 3(3-0) R: approval of department.
Toxicology related to food safety. Metabolism of toxicants as influenced by food constituents, mutagenesis, and chemical carcinogenesis. Risk assessment.

823 Diet and Immune Function
Spring of odd years. 3(3-0) RB: Biochemistry and Microbiology.
Influence of diet on the immune system and relationship to infectious and non-infectious diseases, adverse reactions such as food allergy, and alcohol and substance abuse. Methods to evaluate immune function.

831 Advanced Cereal Science
Fall of even years. 3(3-0) RB: (BMB 401 and FSC 331 and FSC 401) or approval of department.
Physico-chemical properties of major constituents in cereal grains. Relationship of constituent structures to functionality in the processing of cereal grains into food products, with emphasis on wheat.

840 Advanced Food Microbiology
Spring of even years. 4(4-0) Interdepartmental with Microbiology and Molecular Genetics. Administered by Food Science. RB: MMG 201 or MMG 301 Not open to students with credit in FSC 440.
In-depth discussion of major groups of microorganisms relevant to the food industry. Ecological, physiological and public health aspects.

842 Foodborne Diseases
Spring of odd years. 3(3-0) RB: FSC 440 or FSC 840
Epidemiology, isolation, characterization, clinical manifestations, pathogenicity, incidence and control of bacterial, parasitic and viral foodborne pathogens and associated toxins.

860 Research in Food Processing Technology
Summer of even years. 2(1-2) R: Open only to graduate students in the Department of Food Science and Human Nutrition or Department of Animal Science or Department of Horticulture.
Theory, application, and evaluation of food processing technology: ultrafiltration, food irradiation, and critical point extraction.

890 Special Problems in Food Science
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to graduate students in Food Science. Approval of department; application required.
Individual investigation of an area of food science.

891 Selected Topics in Food Science
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to graduate students in the Food Science major or Human Nutrition major.
Topics of current interest and importance in basic and applied areas of food science.

892 Food Science Seminar
Fall, Spring. 1(1-0) A student may earn a maximum of 4 credits in all enrollments for this course. R: Open only to graduate students in the Food Science major.
Critical review of literature. Organization and communication of scientific data in food science.

898 Master's Research
Fall, Spring, Summer. 1 to 5 credits. A student may earn a maximum of 5 credits in all enrollments for this course. R: Open only to master's students in Food Science. Approval of department.
Directed research in support of Plan B master's degree requirements.

899 Master's Thesis Research
Fall, Spring, Summer. 1 to 10 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Open only to master's students in the Food Science major.
Master's thesis research.

999 Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Open only to doctoral students in the Food Science major.
Doctoral dissertation research.