

FOOD SCIENCE (FOOD)

FOOD*2010 Principles of Food Science Winter and Summer (LEC: 3) [0.50]

The principles involved in the processing, handling and storage of foods are introduced in this course. The relationship of science and technology to food processing is discussed.

Offering(s): Offered through Distance Education format only.

Restriction(s): FOOD*2150, FOOD*3090, NUTR*2150

Department(s): Department of Food Science

Location(s): Guelph

FOOD*2100 Communication in Food Science Winter Only (LEC: 3) [0.50]

Students will acquire basic skills in technical and business communication and be prepared to complete a variety of communication assignments in subsequent semesters. Students will learn and apply the principles of effective written and oral communication.

Restriction(s): Restricted to students in BSC.FOOD, BSC.FOOD:C, BBRM.FIM, BBRM.FIM:C majors

Department(s): Department of Food Science

Location(s): Guelph

FOOD*2150 Introduction to Nutritional and Food Science Fall Only (LEC: 3) [0.50]

This interdisciplinary course provides an introduction to the Food and Nutritional Sciences from both historical and modern perspectives. Major themes are the nutritional and functional properties of food, nutrient assimilation, food preservation and safety, and the interactions between food processing, diets and health. (Also listed as NUTR*2150.)

Prerequisite(s): BIOL*1080, CHEM*1040

Equate(s): NUTR*2150

Restriction(s): FOOD*2010, FOOD*3090. Not available to students registered in BASC.AHN major.

Department(s): Department of Food Science

Location(s): Guelph

FOOD*2400 Introduction to Food Chemistry Summer Only (LEC: 3) [0.50]

The chemistry and biochemistry of the major components of foods (lipids, proteins, carbohydrates and water/ice) are introduced in this course. In addition, an overview of some of the reactions and changes in food components which occur during processing, handling and storage will be presented. This course may not be taken for credit by students in the Food Science Major.

Offering(s): Offered through Distance Education format only.

Prerequisite(s): CHEM*1040

Restriction(s): FOOD*3030, FOOD*3050

Department(s): Department of Food Science

Location(s): Guelph

FOOD*2410 Introduction to Food Processing Winter Only (LEC: 3) [0.50]

Food processes and the relationships between chemistry, microbiology, and engineering as they apply to food processing are discussed. The following topics are included: high and low temperature processes; moisture control and intermediate moisture foods; concentration and dehydration processes; and novel food processing techniques.

Offering(s): Offered through Distance Education format only.

Prerequisite(s): CHEM*1040, (1 of BIOL*1070, BIOL*1080, MICR*2420)

Restriction(s): FOOD*3140, FOOD*3160, FOOD*3170. Not available to students registered in BBRM.FIM, BBRM.FIM:C, BSC.FOOD or BSC.FOOD:C majors.

Department(s): Department of Food Science

Location(s): Guelph

FOOD*2420 Introduction to Food Microbiology Fall Only (LEC: 3) [0.50]

An introduction to the major groups of microorganisms important in foods is presented in this course, including microbial spoilage of food, food-borne illness, and food fermentations. Sources of contamination during production, processing and storage of foods and evaluation of food processing conditions used to control the presence and/or growth of microorganisms in foods are discussed.

Offering(s): Offered through Distance Education format only.

Prerequisite(s): BIOL*1070 or MICR*2420

Restriction(s): FOOD*3230, FOOD*3240. Not available to students registered in BBRM.FIM, BBRM.FIM:C, BSC.FOOD or BSC.FOOD:C majors.

Department(s): Department of Food Science

Location(s): Guelph

FOOD*2620 Food Engineering Principles Winter Only (LEC: 3, LAB: 2) [0.50]

Introduction to engineering principles and operations in food processing including heat transfer, fluid flow, material and energy balances, instrumentation and process control concepts.

Prerequisite(s): (BIOC*2580 or CHEM*2880), (1 of MATH*1030, MATH*1080, MATH*1200)

Department(s): Department of Food Science

Location(s): Guelph

FOOD*3030 Food Chemistry I Fall Only (LEC: 3, LAB: 3) [0.50]

This course covers the fundamental principles of the chemistry of foods. The course will discuss selected topics related to the chemistry (physical, organic and analytical) and physics of the major components in food materials such as lipids, proteins, carbohydrates and water.

Prerequisite(s): BIOC*2580

Restriction(s): Registration is limited to students registered in the BSCH.FOOD, FOOD:C or BASC.AHN majors.

Department(s): Department of Food Science

Location(s): Guelph

FOOD*3040 Food Chemistry II Winter Only (LEC: 3, LAB: 3) [0.50]

This course covers the fundamental principles of the chemistry of foods, as a continuation of FOOD*3030. This course will discuss topics related to the chemistry (physical, organic and analytical) and physics of emulsions and emulsifiers, pigments, flavours and flavour perception, enzymes and processing additives.

Prerequisite(s): FOOD*3030

Restriction(s): Registration is limited to students registered in the BSCH.FOOD or FOOD:C majors.

Department(s): Department of Food Science

Location(s): Guelph

FOOD*3050 Food Chemistry I Fall Only (LEC: 3) [0.50]

This course covers the fundamental principles of the chemistry of foods. The course will discuss selected topics related to the chemistry (physical, organic and analytical) and physics of the major components in food materials such as lipids, proteins, carbohydrates and water. This course is the same as FOOD*3030, without the laboratory component.

Prerequisite(s): BIOC*2580

Restriction(s): FOOD*2400, FOOD*3030. Not available to students registered in BSCH.FOOD or FOOD:C majors.

Department(s): Department of Food Science

Location(s): Guelph

FOOD*3060 Food Chemistry II Winter Only (LEC: 3) [0.50]

This course covers the fundamental principles of the chemistry of foods, as a continuation of FOOD*3030. This course will discuss topics related to the chemistry (physical, organic and analytical) and physics of emulsions and emulsifiers, pigments, flavors and flavor perception, enzymes and processing additives. This course is the same as FOOD*3040, without the laboratory component.

Prerequisite(s): FOOD*3030 or FOOD*3050

Restriction(s): FOOD*3040. Not available to students registered in BSC.FOOD or FOOD:C majors.

Department(s): Department of Food Science

Location(s): Guelph

FOOD*3090 Food Science and Human Nutrition Fall Only (LEC: 3, LAB: 2) [0.50]

This course will introduce students to the chemistry and microbiology of food and post-production food handling and processing. It will also introduce students to the role of food components in human nutrition and the interactions between diets and health. Food product development will integrate these two disciplines. Lectures will be taken simultaneously with students in FOOD*2150/NUTR*2150. Lectures will be supplemented with a series of laboratory assignments.

Prerequisite(s): AGR*1110, CHEM*1040 (1 of BIOL*1050, BIOL*1070, BIOL*1080)

Restriction(s): FOOD*2010, FOOD*2150, NUTR*2150. Restricted to students in BSC(AGR) as well as students in the Minor in Agriculture.

Department(s): Department of Food Science

Location(s): Guelph

FOOD*3140 Food Processing I Fall Only (LEC: 3) [0.50]

This course builds on basic engineering principles to understand the operation of modern food processing plant facilities. The standard equipment used and the underlying principles that control their operation are examined for various high temperature (blanching, pasteurization, sterilization, evaporation, drying, extrusion) and ambient temperature (size reduction, homogenization, emulsification, centrifugation, filtration, extraction, irradiation) unit operations.

Prerequisite(s): ENGG*2660 or (FOOD*2620, MICR*2420)

Restriction(s): FOOD*3160. Not available to students registered in BSC.FOOD or FOOD:C

Department(s): Department of Food Science

Location(s): Guelph

FOOD*3160 Food Processing I Fall Only (LEC: 3, LAB: 3) [0.75]

This course builds on basic engineering principles to understand the operation of modern food processing plant facilities. The standard equipment used and the underlying principles that control their operation are examined for various high temperature (blanching, pasteurization, sterilization, evaporation, drying, extrusion) and ambient temperature (size reduction, homogenization, emulsification, centrifugation, filtration, extraction, irradiation) unit operations.

Prerequisite(s): ENGG*2660 or (FOOD*2620, MICR*2420)

Restriction(s): FOOD*2620. Not available to students registered in BBRM.FIM or BBRM.FIM:C.

Department(s): Department of Food Science

Location(s): Guelph

FOOD*3170 Food Processing II Winter Only (LEC: 3, LAB: 3) [0.50]

This course looks at various low temperature food processing unit operations (e.g., refrigerated storage, freezers, freeze driers), the design and operation of ancillary food plant equipment (e.g., refrigeration, boiler, pumping, control, sanitation, water, and wastewater treatment systems) and integration of the various unit operations into a functioning food process.

Prerequisite(s): FOOD*3140 or FOOD*3160

Department(s): Department of Food Science

Location(s): Guelph

FOOD*3230 Food Microbiology Fall Only (LEC: 3, LAB: 3) [0.75]

Important groups of microorganisms associated with food spoilage, food fermentations, food infections and intoxications are discussed in this course. Intrinsic and extrinsic factors and their relationship to microbial growth, control of microorganisms by food processing and application of Hazard Analysis Critical Control Points (HACCP) programs are also discussed. Laboratory classes will provide experience in microbiological techniques, sampling and basic genetic engineering.

Prerequisite(s): MICR*2420

Restriction(s): FOOD*2420, FOOD*3240 Restricted to students in BSCH.FOOD, FOOD:C, MICR, MICR:C and BASC.AHN majors.

Department(s): Department of Food Science

Location(s): Guelph

FOOD*3240 Food Microbiology Fall Only (LEC: 3) [0.50]

Important groups of microorganisms associated with food spoilage, food fermentations, food infections and intoxications are discussed in this course. Intrinsic and extrinsic factors and their relationship to microbial growth, control of microorganisms by food processing and application of Hazard Analysis Critical Control Points (HACCP) programs are also discussed. This course is the same as FOOD*3230, without the laboratory component.

Prerequisite(s): MICR*2420

Restriction(s): FOOD*2420, FOOD*3230. Not available to students registered in BSC.FOOD or BSC.FOOD:C majors.

Department(s): Department of Food Science

Location(s): Guelph

FOOD*3260 Industrial Microbiology Winter Only (LEC: 3, LAB: 3) [0.50]

The course will present microbiological and technological principles of the industrial application of microorganisms followed by specific examples. Lectures will cover the basics of metabolic pathways and how these can be manipulated through selection or genetic engineering to increase productivity. The main focus of the course will be in the production of alcoholic beverages but will also include production of biomass, solvents, amino acids and organic acids of direct relevance to the food industry. The laboratory component of the course will include wine production, beer brewing and dairy fermentations. Field trips to a commercial winery and brewery will also aid the learning experience.

Prerequisite(s): MICR*2420

Restriction(s): FOOD*3270. Students must be of legal drinking age in the Province of Ontario. Restricted to students in BSCH.FOOD, FOOD:C, MICR or MICR:C majors

Department(s): Department of Food Science

Location(s): Guelph

FOOD*3270 Industrial Microbiology Winter Only (LEC: 3) [0.50]

The course will present microbiological and technological principles of the industrial application of microorganisms followed by specific examples. Lectures will cover the basics of metabolic pathways and how these can be manipulated through selection or genetic engineering to increase productivity. The main focus of the course will be in the production of alcoholic beverages but will also include production of biomass, solvents, amino acids and organic acids of direct relevance to the food industry. Field trips to a commercial winery and brewery will also aid the learning experience. This course is the same as FOOD*3260, without the laboratory component.

Prerequisite(s): MICR*2420

Restriction(s): FOOD*3260. Students must be of legal drinking age in the Province of Ontario. Not available to students registered in BSC.FOOD or BSC.FOOD:C majors.

Department(s): Department of Food Science

Location(s): Guelph

FOOD*3430 Introduction to Food Analysis Fall Only (LEC: 3) [0.50]

This course offers an introduction to quantitative analysis of foods by chemical, physical and instrumental means. Determination of both major and minor constituents of foods are discussed.

Offering(s): Offered through Distance Education format only.

Prerequisite(s): FOOD*2400

Restriction(s): FOOD*4190

Department(s): Department of Food Science

Location(s): Guelph

FOOD*3700 Sensory Evaluation of Foods Winter Only (LEC: 3, LAB: 3) [0.50]

This course is an introduction to sensory science. Students will gain an understanding of the factors contributing to sensory perception of foods. Sensory methodology and statistical tools for evaluation of all sensory aspects of food will be provided and all students will gain hands-on experience with implementation, statistical analysis and interpretation of sensory data. Consumer sensory testing methods will also be discussed.

Prerequisite(s): (FOOD*2150 or HTM*2700), (1 of STAT*2040, STAT*2060, STAT*2080)

Restriction(s): This is a Priority Access Course. Registration may be restricted to students in BSCH.FOOD, BSCH.FOOD:C, BBRM.FIM, BBRM.FIM:C, BCOM.HTM, BCOM.HTM:C or BASC.AHN during certain periods.

Department(s): Department of Food Science

Location(s): Guelph

FOOD*4020 Quality Management in the Food Industry Winter Only (LEC: 4) [0.50]

Quality management is a business philosophy that focuses on maximizing customer satisfaction by ensuring the provision of products or services that consistently meet or exceed customer expectations. In this course, the student will come to understand the various definitions of quality as well as various quality management systems that are relevant to the food industry. The student will also gain an understanding of the crucial role of continuous improvement and monitoring customer satisfaction within the food industry. This course uses traditional lectures by the instructor and by guests from organizations that produce, ship, sell or regulate food products.

Prerequisite(s): FARE*3310, FOOD*3170

Department(s): Department of Food Science

Location(s): Guelph

FOOD*4070 Food Packaging Fall Only (LEC: 3) [0.50]

Functions of packaging in food preservation systems will be examined using a review of current packaging materials, their properties, production methods and applications for specific products. Additional topics include regulatory, environmental and marketplace influences on food packaging choices.

Prerequisite(s): 7.00 credits in science or engineering

Department(s): Department of Food Science

Location(s): Guelph

FOOD*4090 Functional Foods and Nutraceuticals Winter Only (LEC: 3) [0.50]

The course examines the relation of functional foods and nutraceuticals (FFN) to food and drugs. The safety and efficacy of individual FFN products, and the regulatory issues that influence the development and commercialization of FFN in global markets are emphasized. Also listed as NUTR*4090.

Prerequisite(s): NUTR*3210

Equate(s): NUTR*4090

Department(s): Department of Food Science, Department of Human Health and Nutritional Sciences

Location(s): Guelph

FOOD*4110 Meat and Poultry Processing Winter Only (LEC: 2, LAB: 3) [0.50]

The course focuses on the principles and techniques employed by the meat industry in the production of raw and semi/fully cooked products. Lectures include a study of muscle structure and its relation to meat quality, the physical properties of meat proteins, lipids and flavour compounds important in meat processing. Practical applications of processing techniques (including producing different products in lab) packaging and merchandizing are emphasized in the laboratory. Other sources of animal proteins, such as eggs, are also covered. Emphasis is put on learning how various food science principles (e.g. emulsification, preservation, HACCP) are used to optimize meat products' quality and safety.

Prerequisite(s): 1 of ANSC*2340, FOOD*3090, FOOD*3140, FOOD*3160

Department(s): Department of Food Science

Location(s): Guelph

FOOD*4190 Advanced Food Analysis Fall Only (LEC: 3, LAB: 3) [0.50]

In this course the quantitative analysis of foods by chemical and physical methods will be studied with emphasis on modern/advanced technologies. Both major and minor constituents will be discussed.

Co-requisite(s): 1 of CHEM*2400, CHEM*2480, FOOD*3030, FOOD*3050

Department(s): Department of Food Science

Location(s): Guelph

FOOD*4220 Topics in Food Science Summer, Fall, and Winter (LAB: 3) [0.50]

Independent study of a selected topic in Food Science, involving a review and critical evaluation of the current literature. The course comprises independent library research and students are required to present a concise report in a written paper and in a seminar. Students must make arrangements with both faculty supervisor and the course co-ordinator in a prior course selection period.

Prerequisite(s): 14.00 credits including 1.50 credits at the 3000 level or higher in Food Science.

Restriction(s): Instructor consent required.

Department(s): Department of Food Science

Location(s): Guelph

FOOD*4230 Research in Food Science Summer, Fall, and Winter (LAB: 3) [0.50]

This course involves independent laboratory research of a selected topic in Food Science, under the supervision of an individual faculty. The laboratory research is based on the literature review conducted in FOOD*4220. In addition, a review and critical appraisal of experimental principles will guide the design of laboratory experiments. Students are required to present a concise report in a written paper and in a seminar. Students must make arrangements with both faculty supervisor and the course co-ordinator in a prior course selection period.

Prerequisite(s): FOOD*4220

Restriction(s): Instructor consent required.

Department(s): Department of Food Science

Location(s): Guelph

FOOD*4260 Food Product Development I Fall Only (LEC: 3, LAB: 3) [0.50]

This course examines the research and development process related to new food products. Through a series of lectures and presentations students will learn the underlying theory behind food product development including idea generation, prototype development and new product manufacturing, evaluation and product marketing. Students will also gain a real world understanding of the process through their involvement and interaction with invited industry speakers. Students will work in teams with students from other disciplines to plan a food product development project.

Prerequisite(s): FOOD*2100, FOOD*3700, (FOOD*3030 or FOOD*3050), (FOOD*3140 or FOOD*3160), (FOOD*3230 or FOOD*3240)

Restriction(s): MGMT*4020, MGMT*4030

Department(s): Department of Food Science

Location(s): Guelph

FOOD*4270 Food Product Development II Winter Only (LEC: 3, LAB: 3) [0.50]

This course will compliment the Food Product Development I course by further assisting students in gaining a comprehensive understanding of the principles and process of food product development. Students will use the theory obtained from the Food Product Development I course to put into practice and gain real life experience in the planning, conducting, and communicating results as a team while developing a pre-approved food product.

Prerequisite(s): FOOD*4260

Restriction(s): MGMT*4020, MGMT*4030

Department(s): Department of Food Science

Location(s): Guelph

FOOD*4310 Food Safety Management Systems Winter Only (LEC: 3) [0.50]

Participants will learn and apply principles of food safety management and the systems involved. The course is organized in four modules: plant hygiene, principles of Hazard Analysis Critical Control Point (HACCP), HACCP based food safety programs in Canada, and ISO Food Safety Management Systems.

Offering(s): Also offered through Distance Education format.

Prerequisite(s): (FOOD*2010 or FOOD*2150), (1 of FOOD*2410, FOOD*3140, FOOD*3160), (1 of FOOD*2420, FOOD*3230, FOOD*3240)

Department(s): Department of Food Science

Location(s): Guelph

FOOD*4400 Dairy Processing Winter Only (LEC: 3, LAB: 3) [0.50]

The production, processing, chemistry, microbiology and marketing of fluid milk, frozen dairy products, cheese, fermented dairy foods and butter are studied in this course.

Prerequisite(s): BIOC*2580, MICR*2420, (FOOD*2150 or FOOD*3090)

Department(s): Department of Food Science

Location(s): Guelph

FOOD*4520 Utilization of Cereal Grains for Human Food Fall Only (LEC: 3, LAB: 3) [0.50]

The course will cover topics related to the history of agriculture as it relates to cereal grains; basic principles behind grain breeding and its relevance to grain quality and functionality; regulations as they relate to grain quality; fractionation of cereal components and their utilization; relationship between grain structure/ composition and processing of cereal-based foods; principles of analytical tools commonly used to assess grain and product quality; science and technology as it relates to manufacturing and shelf life of common cereal-based foods from wheat, corn, rice and barley; functional and nutritional attributes of cereal grains; recent advances in cereal science and technology and the non-food uses of cereal grain components.

Prerequisite(s): BIOC*2580, (1 of BIOL*1050, BIOL*1070, BIOL*1080), (1 of AGR*2470, FOOD*2150, FOOD*3090, NUTR*3210)

Department(s): Department of Food Science

Location(s): Guelph