FOOD SCIENCE (FOOD)

FOOD 1000 Food Safety Today and Tomorrow 3 cr
A contemporary examination of the safety of the food supply - where, how and why problems may arise and what is and can be done to consistently achieve high quality, safe food. Controversial issues (residues, organic, biotechnology, irradiation) will be discussed in a balanced manner, and prospects for the future presented.
Attributes: Recommended Intro Courses

FOOD 2500 Food Chemistry 3 cr
(Lab required) The chemical components of food. Chemical problems and chemical changes which exist uniquely in foods.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisites: [(CHEM/MBIO 2730 and CHEM 2740) or the former CHEM/MBIO 2770] or [(CHEM/MBIO 2700 (CHEM/MBIO 2701) and CHEM 2720 (CHEM 2721)) or the former CHEM/MBIO 2360 (the former CHEM 2361)].

FOOD 3010 Food Process 1 3 cr
The basic principles and practices of the major techniques used in food processing and preservation are covered. Emphasis is placed on thermal processing, drying, evaporation, chilling, freezing, separation, packaging and sanitation. Also preservation by salting, smoking, microwave, radiation and chemical techniques is presented. Critical issues in food regulations are introduced.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisite: any MATH course at the 1000 level.

FOOD 3160 Frozen Dairy Products 3 cr
Technology of frozen dairy products, including selection and processing of materials and handling of products. Standards and quality control programs for major dairy products will be covered. Offered in 2006-07 and alternate years thereafter.

FOOD 3170 Cheese and Fermented Milk Products 3 cr
Selection and evaluation of raw materials and lactic cultures are covered. Processing, packaging and distribution of cheddar and cottage cheese, cultured milk, cream and yogurt are studied. Offered in 2005-2006 and alternate years thereafter.

FOOD 3200 Baking Science and Technology 3 cr
The science and technology of transforming wheat into quality baked foods. Focus will be on the biophysical and biochemical basis for the functionality of intrinsic wheat constituents, e.g. starch, and gluten proteins, and extrinsic ingredients, e.g. yeast, chemical leaveners, fats, oxidants, enzymes and other improvers. Principles of product formulations and modern processing techniques used to add value to wheat as diverse foods will also be covered.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisites: [(CHEM/MBIO 2730 and CHEM 2740) or the former CHEM/MBIO 2770] or [(CHEM/MBIO 2700 (CHEM/MBIO 2701) and CHEM 2720 (CHEM 2721)) or the former CHEM/MBIO 2360 (the former CHEM 2361)].

FOOD 3210 Food Engineering Fundamentals 3 cr
Applications of engineering fundamentals to unit operations in the food industry.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisite: BIOE 3530.

FOOD 3220 Grains for Food and Beverage 3 cr
The science and technology behind the functionality of major Canadian cereal grains and grain legumes for food and beverage. Grains covered include wheat, barley, oats peas, beans, and lentils in the context of their processing into products such as bread, pasta and beer, and foods high in dietary fibre. Details are presented on the differing physical and chemical attributes of grains to make quality products with focus on the roles of protein, starch, and non-starch polysaccharides.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisite: FOOD 2500 or equivalent.

FOOD 3330 Ingredient Technology for Food Design 3 cr
Chemical and functional properties of ingredients and their application in designed foods: low fat, low calorie, high fibre, high energy and innovative food products. Also offered as HNSC 3330. May not be held with HNSC 3330.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisites: (CHEM/MBIO 2700 (CHEM/MBIO 2701) or CHEM/MBIO 2730, or the former CHEM/MBIO 2770 or the former CHEM/MBIO 2360 (the former CHEM/MBIO 2361)) and [HNSC 2150 or FOOD 2500].
Pre- or corequisites: CHEM 2720 (CHEM 2721) or CHEM 2740 or the former CHEM/MBIO 2770 or the former CHEM/MBIO 2360 (the former CHEM/MBIO 2361).
Equiv To: HNSC 3330

FOOD 3500 Processing of Animal Food Products 3 cr
(Lab required) Processing of materials of animal origin will be studied with emphasis on product quality and safety. The impact of initial characteristics and further processing will be discussed as factors that can affect nutritive value, convenience, functionality, appearance, palatability, and food safety of the final product. Additionally, the course will provide practical experience in identifying the quality parameters, detecting defects, and applying technologies to obtain different foods of animal origin, through labs and field trips.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisite: [CHEM/MBIO 2730 and CHEM 2740 (or the former CHEM/MBIO 2770)] or [CHEM/MBIO 2700 (CHEM/MBIO 2701) and CHEM 2720 (CHEM 2721) (or the former CHEM/MBIO 2360 (the former CHEM/MBIO 2361))].

FOOD 4010 Food Process 2 3 cr
The processing of specific food groups is covered. The functions and changes in the primary chemical components (carbohydrates, proteins and lipids) of the commodities receive special consideration. New technologies including thermal/nonthermal processing, radiation, extrusion, minimal processing and other advanced processing methods will be studied.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisite: FOOD 3010.

FOOD 4100 Current Issues in Food and Human Nutrition 3 cr
Integration of current issues in food and human nutritional sciences. Emphasis on ethics, equity, economics, and professional approaches to challenges in food and human nutritional sciences using case studies, teamwork, and scientific communication to specialists and the public. This is a capstone course restricted to students in year 4 of the B.Sc. Food Science degree programs. May not be held with HNSC 4100 or AGRI 4100 or the former FOOD 4120.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisite: AGRI 2030 or ENGL 1200
Equiv To: FOOD 4120
Mutually Exclusive: AGRI 4100, HNSC 4100

FOOD 4150 Food Microbiology 1 3 cr
(Lab required) This course focuses on the significance of the presence and/or growth of microorganisms in foods and their importance in the production and safety of foods. Contents include the microbial ecology of food, beneficial microorganisms in food systems, pathogenic and spoilage microorganisms, characteristics of foodborne infection, food intoxication and the influence within the food system of the growth and survival of microorganisms and contaminants that may occur in a food-processing environment. Food preservation and food processing related to food microbiology are also discussed.

FOOD 4160 Food Analysis 1 3 cr
This course exposes students to the principles, methods, and techniques of qualitative and quantitative physical, chemical and biological analyses of foods. Major emphasis is placed on understanding the basic principles of classical and instrumental methods of analysis. Criteria for the choice of various analytical methods, methods for treating data and sampling techniques will be studied.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisite: FOOD 2500.

FOOD 4200 Quality Control in Foods 3 cr
Fundamentals of quality control and their industrial application through physical, chemical, microbiological, statistical and sensory methods will be studied. Statistical process control (SPC) will be mainly covered; required background knowledge of statistics will be reviewed briefly.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisite: FOOD 3010.

FOOD 4230 Food Research 3 cr
Research interests and aptitudes of students are developed through specific project assignments related to the food industry.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisite: Permission of Department Head required.

FOOD 4250 Food Analysis 2 3 cr
Advanced techniques employed in the physico-chemical analysis of food products as preparation for research, development, and inspection roles in government and in industry.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisite: FOOD 4160.

FOOD 4260 Water Management in Food Processing 3 cr
(Lab required) The course is devoted to the management of water and wastewater in food processing. The roles of water in food processing, recycle and reuse opportunities, treatment options for water and wastewater are presented. The course also discusses water stewardship in relation to food processing, water and wastewater regulations and implication for hazard analysis and critical control point (HACCP) and International Organization for Standardization (ISO). Laboratory sessions are designed for the student to become familiar with Standard Methods for the Examination of Water and Wastewater. May not be held with the former FOOD 4240.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisites: [CHEM 1110 (CHEM 1111) or CHEM 1130] and [MATH 1300 (MATH 1301) or MATH 1210 (MATH 1211)] or equivalent.
Equiv To: FOOD 4240

FOOD 4270 Sensory Evaluation of Food 3 cr
(Lab required) Sensory perception, principles of the sensory analysis of food, requirements for sensory testing, test methods, selection and training of panelists, statistical analysis and interpretation of data. Also offered as HNSC 4270. May not be held with HNSC 4270.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisites: A minimum 60 credit hours completed, including AGRI 2400 or STAT 2000 or STAT 2001.
Equiv To: HNSC 4270

FOOD 4502 HACCP and Food Safety Regulations 3 cr
This course provides a comprehensive overview of the principles and practices of food safety regulations, focusing on the implementation of HACCP (Hazard Analysis and Critical Control Points) and preventive control plans. Students will explore the key food safety laws, risk assessment methods, and international food safety standards, including the WHO's Risk Analysis framework. Emphasis is placed on understanding foodborne illness surveillance, pathogen monitoring, and the role of food safety audits. Through case studies and real-world applications, students will learn how to develop and implement food safety systems to ensure safe food production and consumption. May not be held with FOOD 4310 or FOOD 4500.
Mutually Exclusive: FOOD 4310, FOOD 4500

FOOD 4510 Food Product Development 3 cr
This course will help the student gain an understanding of the product development procedure as it relates to the food industry. Emphasis will be on application of basic knowledge of foods and food processing in designing a new product. May not be held with HNSC 4280.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisites: ABIZ 1000 and FOOD 3010 and MKT 2210 and [AGRI 2400 or STAT 2000 or STAT 2001].
Equiv To: HNSC 4280

FOOD 4540 Functional Foods and Nutraceuticals 3 cr
The course will examine the bioactive components of functional foods and nutraceuticals, their sources, chemistry, process technology, efficacy, safety and regulation. Also offered as HNSC 4540. May not be held with HNSC 4540.
PR/CR: A minimum grade of C is required unless otherwise indicated.
Prerequisite: [CHEM/MBIO 2730 and CHEM 2740 (or the former CHEM/MBIO 2770)] or [CHEM/MBIO 2700 (CHEM/MBIO 2701) and CHEM 2720 (CHEM 2721) (or the former CHEM/MBIO 2360 (the former CHEM/MBIO 2361))].
Equiv To: HNSC 4540