Food Science and Nutrition

Program Requirements

Food Science and Nutrition
B.Sc. Honours (20.0 credits)

A. Credits Included in the Major CGPA (9.0 credits)		
1. 6.0 credits in:		6.0
FOOD 1001 [0.5]	Introduction to Food Science	
FOOD 2001 [0.5]	Principles of Nutrition	
FOOD 2002 [0.5]	Food Processing	
FOOD 2003 [0.5]	Regulation of the Canadian Food Industry	
FOOD 2004 [0.5]	Scientific Writing in Food Science and Nutrition	
FOOD 3001 [0.5]	Food Chemistry	
FOOD 3002 [0.5]	Food Analysis	
FOOD 3005 [0.5]	Food Microbiology	
FOOD 4001 [0.5]	Food Quality Control	
FOOD 4102 [0.5]	Current Issues in Canadian Food Governance, Regulation and Policy	
FOOD 4103 [0.5]	Food Safety Risk Assessment, Communication and Management I	
FOOD 4201 [0.5]	Advanced Nutrition and Metabolism	
2. 1.5 credits from:		1.5
FOOD 3003 [0.5]	Food Packaging and Shelf Life	
FOOD 3004 [0.5]	Food Engineering	
FOOD 4002 [0.5]	Analysis of Food Contaminants	
FOOD 4202 [0.5]	Micronutrients and Health	
FOOD 4203 [0.5]	Functional Foods and Natural Health Products	
3. 0.5 credit from:		0.5
FOOD 4301 [0.5]	Food Toxicology	
BIOC 4708 [0.5]	Principles of Toxicology	
4. 1.0 credit from:		1.0
FOOD 4905 [1.0]	Food Science and Nutrition Honours Workshop	
FOOD 4907 [1.0]	Food Science and Nutrition Honours Essay and Research Proposal	
FOOD 4908 [1.0]	Food Science and Nutrition Research Project	
B. Credits Not Included in the Major CGPA (11.0 credits)		
5. 0.5 credit from:		0.5
PHIL 1550 [0.5]	Introduction to Ethics and Social Issues	
PHIL 2408 [0.5]	Bioethics	
6. 1.0 credit in:		1.0
ECON 1000 [1.0]	Introduction to Economics	
7. 0.5 credit from:		0.5
0.5 credit in ECON at the 3000 level, or		
BUSI 2204 [0.5]	Basic Marketing	
8. 2.5 credits in:		2.5
CHEM 1001 [0.5]	General Chemistry I	
CHEM 1002 [0.5]	General Chemistry II	
CHEM 2203 [0.5]	Organic Chemistry I	
CHEM 2204 [0.5]	Organic Chemistry II	
CHEM 2303 [0.5]	Analytical Chemistry II	
9. 2.5 credits in:		2.5
BIOL 1103 [0.5]	Foundations of Biology I	
BIOL 1104 [0.5]	Foundations of Biology II	
BIOL 2104 [0.5]	Introductory Genetics	
BIOL 2303 [0.5]	Microbiology	
BIOL 3104 [0.5]	Molecular Genetics	
10. 0.5 credit in:		0.5
BIOC 2200 [0.5]	Cellular Biochemistry	
11. 1.5 credits in:		1.5
MATH 1007 [0.5]	Elementary Calculus I	
STAT 2507 [0.5]	Introduction to Statistical Modeling I	
STAT 2509 [0.5]	Introduction to Statistical Modeling II	
12. 0.5 credit in:		0.5
PHYS 1007 [0.5]	Elementary University Physics I	
13. 0.5 credit in Science Continuation Courses not in FOOD		0.5
14. 1.0 credit in free electives		1.0
Total Credits		20.0

Minor in Food Science (4.0 credits)

The Minor in Food Science is available to degree students registered in programs other than the Food Science and Nutrition B.Sc. Honours program. Note that there are several prerequisites in Chemistry, Biochemistry and Math that may also need to be satisfied.

Requirements		
1. 0.5 credit in:		0.5
FOOD 1001 [0.5]	Introduction to Food Science	
2. 0.5 credit from:		0.5
FOOD 2001 [0.5]	Principles of Nutrition	
FOOD 2002 [0.5]	Food Processing	
3. 3.0 credits in FOOD at 2000-level or higher		3.0
4. The remaining requirements of the major discipline(s) and degree must be satisfied.		
Total Credits		4.0

Food Science (FOOD) Courses

FOOD 1001 [0.5 credit]
Introduction to Food Science
Overview of the food industry. Production, processing, product development, packaging, chemistry, analysis, microbiology. Elements risk assessment, policy making and regulation.
Lectures three hours a week.

FOOD 2001 [0.5 credit]
Principles of Nutrition
Roles of nutrients, lipids, proteins, carbohydrates, fluids and electrolytes. Digestion, absorption, transport, energy metabolism. Disorders including diabetes, cardiovascular disease and osteoporosis. Nutrition through the life cycle.
Prerequisite(s): CHEM 1001, CHEM 1002, BIOL 1103.
Lectures three hours a week.

FOOD 2002 [0.5 credit]
Food Processing
Principles of major techniques used in food processing and preservation. Processing of specific food groups including cereals, oilseeds, dairy, beverages and frozen foods. Effects of processing on physico-chemical, rheological, and sensory characteristics. Role of research and development in food industry.
Prerequisite(s): FOOD 1001.
Lectures three hours a week.

FOOD 2003 [0.5 credit]
Regulation of the Canadian Food Industry
Regulation of the Canadian food industry including regulators, regulatory powers, the process of enacting laws/regulation and food safety requirements. Food composition, standardization, advertising, labeling, packaging, ingredients, additives, and fortification requirements. Inspection, enforcement and compliance powers and policies.
Prerequisite(s): ECON 1000 and second year standing in the Food Science and Nutrition program.
Lectures three hours per week.

FOOD 2004 [0.5 credit]
Scientific Writing in Food Science and Nutrition
Principles of effective scientific writing, including critical thinking, appropriate to food science and nutrition. Applicable to laboratory reports, literature reviews, memoranda, position statements, and policy analysis.
Prerequisite(s): FOOD 1001 and second year standing in Food Science and Nutrition.
Workshop three hours a week.

FOOD 3001 [0.5 credit]
Food Chemistry
Chemistry of the major components of foods such as proteins, lipids, carbohydrates and of the minor components such as enzymes, vitamins and various additives and their relationships to food stability and degradation.
Prerequisite(s): FOOD 1001, FOOD 2001, CHEM 2203, BIOC 2200, BIOL 2303.
Lectures three hours a week, laboratory three hours a week.

FOOD 3002 [0.5 credit]
Food Analysis
In-depth principles and practices of food proximate analysis. Introductory concepts of food adulteration and detection. Major techniques such as chromatography, colorimetry, spectroscopy, rheology.
Prerequisite(s): FOOD 1001, FOOD 2001, FOOD 3001.
Lectures three hours a week, laboratory three hours a week.

FOOD 3003 [0.5 credit]
Food Packaging and Shelf Life
An introduction to the materials used for food packaging, including their chemical and physical characteristics. Interactions of these materials with food products, and their effects on shelf life of food.
Prerequisite(s): FOOD 2002.
Lectures three hours a week.

FOOD 3004 [0.5 credit]
Food Engineering
Principles of food engineering. Unit operation in food processing, heat and mass transfer, material balances, fluid mechanics.
Prerequisite(s): FOOD 2002, MATH 1007, and MATH 1107.
Lectures three hours a week.

FOOD 3005 [0.5 credit]
Food Microbiology
Foodborne diseases, microbial growth and survival, food spoilage, food fermentation. Techniques for detecting and quantifying microorganisms in foods.
Prerequisite(s): FOOD 1001, FOOD 2001, BIOL 2303.
Lectures three hours a week, laboratory three hours a week.

FOOD 3999 [0.0 credit]
Co-operative Work Term
Provides practical experience for students enrolled in the Co-operative option. Students must receive satisfactory evaluations from their work term employer. Written and oral reports will be required. Graded as Sat or Uns.
Prerequisite(s): Registration in the Food Science and Nutrition Co-operative Education option and permission of the Department.
Work term.

FOOD 4001 [0.5 credit]
Food Quality Control
Factors affecting quality in manufacturing and processing of foods and principles of quality control and quality assurance. Sampling plans and statistical methods. Applications of physical, chemical, biological and microbiological tests in quality control. Quality systems and standards.
Prerequisite(s): FOOD 2002, FOOD 2003, and third or fourth year standing in the Food Science and Nutrition program.
Also offered at the graduate level, with different requirements, as FOOD 5104, for which additional credit is precluded.
Lectures three hours a week.

FOOD 4002 [0.5 credit]
Analysis of Food Contaminants
Official methods to identify food contaminants and adulterated foods. Includes agricultural chemicals, veterinary drugs, toxins, metals, and allergens. Interpretation of results in the context of current Canadian and international food safety regulations.
Prerequisite(s): FOOD 3002.
Laboratory four hours per week, tutorial one hour a week.

FOOD 4102 [0.5 credit]
Current Issues in Canadian Food Governance, Regulation and Policy
Focus on the ever-changing and evolving issues in Canadian food governance, regulation and policy. Topical food safety, governance, policies, enforcement, trade and import/export issues and developments.
Prerequisite(s): FOOD 2003, and third or fourth year standing in the Food Science and Nutrition program.
Lectures three hours a week.

FOOD 4103 [0.5 credit]
Food Safety Risk Assessment, Communication and Management I
The role of risk management in providing science-based approaches to solving food safety problem. Risk management models and practical applications in critical risk management. An examination of actual risk assessments. Risk communication is addressed.
Prerequisite(s): FOOD 2003 and third or fourth year standing in the Food Science and Nutrition program, or permission of the department.
Lectures three hours a week.

FOOD 4201 [0.5 credit]
Advanced Nutrition and Metabolism
Metabolism of macronutrients in the human body. Detailed catabolic and anabolic reactions of carbohydrates, lipids and proteins. Regulatory control points in healthy and diseased states. Discussion of the literature pertaining to nutrition, metabolism and chronic disease.
Prerequisite(s): FOOD 2001 and fourth year standing in the Food Science and Nutrition program.
Also offered at the graduate level, with different requirements, as FOOD 5101, for which additional credit is precluded.
Lectures three hours a week.

FOOD 4202 [0.5 credit]
Micronutrients and Health
Animal and plant-based sources of micronutrients. Metabolism of vitamins and minerals in the human body and associated diseases throughout the life cycle. Micronutrient supplementation to promote human health.
Prerequisite(s): FOOD 2001 and third or fourth year standing in the Food Science and Nutrition program.
Lectures three hours a week.

FOOD 4203 [0.5 credit]
Functional Foods and Natural Health Products
Study of the bioactive components of functional foods and natural health products, for the improvement of health and nutrition. Sources and chemistry of bioactives, mechanisms of actions, process technology, efficacy and safety. Role of research and development in industry in commercialization of new products.
Prerequisite(s): FOOD 3001.
Also offered at the graduate level, with different requirements, as FOOD 5105, for which additional credit is precluded.
Lectures three hours a week.

FOOD 4301 [0.5 credit]
Food Toxicology
Principles of toxicology as they apply to endogenous plant toxicants, endogenous animal poisons, mycotoxins, pesticide residues, veterinary drugs, food additives, heavy metals, and toxicants produced as a result of processing.
Prerequisite(s): FOOD 3001 and third- or fourth-year standing in the Food Science and Nutrition program.
Lectures three hours a week.

FOOD 4905 [1.0 credit]
Food Science and Nutrition Honours Workshop
Active learning in areas that include information literacy, critical evaluation of scientific literature, written and oral communication, evaluation and interpretation of results, statistics and data management. Emphasizes transferable skills which are most appropriate for non-research career paths.
Precludes additional credit for FOOD 4907, FOOD 4908.
Prerequisite(s): fourth-year standing in Food Science and Nutrition.
Workshop three hours a week.

FOOD 4907 [1.0 credit]
Food Science and Nutrition Honours Essay and Research Proposal
Students conduct an independent research study using library resources, and prepare a critical review and study proposal on a topic approved by a faculty supervisor. A written report and an oral poster presentation of the work are required before a grade can be assigned.
Precludes additional credit for FOOD 4905, FOOD 4908, CHEM 4907 and CHEM 4908.
Prerequisite(s): fourth-year standing in the Food Science and Nutrition program, minimum Major CGPA of 8.0, and permission of the department.

FOOD 4908 [1.0 credit]
Food Science and Nutrition Research Project
Students in Food Science and Nutrition carry out a research project under the direction of a faculty member. A written report and an oral presentation of the work are required before a grade can be assigned.
Precludes additional credit for FOOD 4905, FOOD 4907, CHEM 4907 and CHEM 4908.
Prerequisite(s): fourth-year standing in the Food Science and Nutrition program, minimum Major CGPA of 8.0, and permission of the department.
Laboratory and associated work equivalent to at least eight hours per week for two terms.

Summer session: some of the courses listed in this Calendar are offered during the summer. Hours and scheduling for summer session courses will differ significantly from those reported in the fall/winter Calendar. To determine the scheduling and hours for summer session classes, consult the class schedule at central.carleton.ca

Not all courses listed are offered in a given year. For an up-to-date statement of course offerings for the current session and to determine the term of offering, consult the class schedule at central.carleton.ca