Food Science and Nutrition

Graduation Requirements

In addition to the requirements listed below, students must satisfy:

1. the University regulations (see the *Academic Regulations of the University* section of this Calendar),
2. the common regulations applying to all B.Sc. programs including those relating to Science Continuation and Breadth requirements (see the *Academic Regulations for the Bachelor of Science Degree*).

Students should consult with the Department when planning their program and selecting courses.

Program Requirements

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

A. Credits Included in the Major CGPA (8.0 credits)		
1. 6.5 credits in:		6.5
FOOD 1001 [0.5]	Introduction to Food Science	
FOOD 2001 [0.5]	Principles of Nutrition	
FOOD 3001 [0.5]	Food Chemistry	
FOOD 3002 [0.5]	Food Analysis	
FOOD 3003 [0.5]	Food Packaging and Shelf Life	
FOOD 3004 [0.5]	Food Engineering	
FOOD 3005 [0.5]	Food Microbiology	
FOOD 4001 [0.5]	Food Quality Control	
FOOD 4103 [0.5]	Food Safety Risk Assessment, Communication and Management I	
FOOD 4102 [0.5]	Regulation of the Food Industry	
FOOD 4201 [0.5]	Advanced Nutrition and Metabolism	
FOOD 4907 [1.0]	Food Science and Nutrition Honours Essay and Research Proposal	
or FOOD 4908 [1.0]	Food Science and Nutrition Research Project	
2. 1.5 credit in:		1.5
ECON 1000 [1.0]	Introduction to Economics	
ECON 3300 [0.5]	Public Policy Toward Business	
B. Credits Not Included in the Major CGPA (12.0 credits)		
3. 3.0 credits in:		3.0
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	
CHEM 5709 [0.5]	Chemical Toxicology	
4. 2.5 credits in:		2.5
BIOL 1003 [0.5]	Introductory Biology I	
BIOL 1004 [0.5]	Introductory Biology II	
BIOL 2104 [0.5]	Introductory Genetics	
BIOL 2303 [0.5]	Microbiology	
BIOL 3104 [0.5]	Molecular Genetics	
5. 1.0 credit in:		1.0
MATH 1007 [0.5]	Elementary Calculus I	
MATH 1107 [0.5]	Linear Algebra I	
6. 1.0 credit in:		1.0
STAT 2507 [0.5]	Introduction to Statistical Modeling I	
STAT 2509 [0.5]	Introduction to Statistical Modeling II	
7. 1.0 credit in:		1.0
BIOC 2200 [0.5]	Cellular Biochemistry	
BIOC 4708 [0.5]	Principles of Toxicology	
8. 0.5 credit from:		0.5
PHYS 1007 [0.5]	Elementary University Physics I	
ERTH 1006 [0.5]	Exploring Planet Earth	
ERTH 1009 [0.5]	The Earth System Through Time	
9. 0.5 credits in Science Continuation Courses (Not FOOD)		0.5
10. 1.5 credits in Science Faculty Electives		1.5
11. 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. 1.0 credit in:		1.0
FOOD 1001 [0.5]	Introduction to Food Science	
FOOD 2001 [0.5]	Principles of Nutrition	
2. 3.0 credits in FOOD at 2000-level or higher		3.0
3. The remaining requirements of the major discipline(s) and degree must be satisfied.		
Total Credits		4.0

Food Science (FOOD) Courses

Chemistry

Faculty of Science

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 1003.
Lectures 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 2001, CHEM 2203, BIOC 2200, BIOL 2303.
Lectures three hours a week, laboratory three hours a week.

FOOD 3002 [0.5 credit]
Food Analysis
Techniques for analysis of food for moisture, fat, protein, ash and fibre as well as some of the minor components of food. Titrations, extractions, calorimetry, spectroscopy, immunoassays.
Prerequisite(s): 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 2001, CHEM 2303.
Lectures three hours a week.

FOOD 3004 [0.5 credit]
Food Engineering
Basic engineering principles applicable to a wide range of food engineering and food processing situations, illustrating the uses of engineering concepts in industrial food processing applications. Energy and material balances, fluid mechanics, heat transfer.
Prerequisite(s): MATH 1007, MATH 1107, CHEM 2303.
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): BIOL 2303.
Lectures three hours a week, laboratory three hours a week.

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 3004 and third or fourth year standing in the Food Science and Nutrition program.
Lectures three hours a week.

FOOD 4102 [0.5 credit]
Regulation of the Food Industry
Regulation of the food industry with particular emphasis on Canadian regulations. Advertising, labelling, packaging, Food additives, supplements and fortifications. Regulation of organic, genetically modified and irradiated foods. Inspection, enforcement and compliance.
Prerequisite(s): ECON 3300, 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): third or fourth year standing in the Food Science and Nutrition program.
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, FOOD 3002, and third or fourth year standing in the Food Science and Nutrition program.
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 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 4908, CHEM 4907 and CHEM 4908.
Prerequisite(s): fourth-year standing in the Food Science and Nutrition program.

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. Laboratory and associated work equivalent to at least eight hours per week for two terms.
Precludes additional credit for FOOD 4907, CHEM 4907 and CHEM 4908.
Prerequisite(s): fourth year standing in the Food Science and Nutrition program.

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