

2020-2021 Undergraduate Calendar

The information published in this Undergraduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2020-2021 academic year, including the Summer Semester 2020, the Fall Semester 2020 and the Winter Semester 2021.

For your convenience the Undergraduate Calendar is available in PDF format.

If you wish to link to the Undergraduate Calendar please refer to the Linking Guidelines.

The University is a full member of:

- Universities Canada

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Revision Information:

| Date | Description |
|------------------|---------------------|
| February 4, 2020 | Initial Publication |
| July 7, 2020 | Second Publication |
| July 28, 2020 | Third Publication |



Disclaimer

University of Guelph 2020

The information published in this Undergraduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2020-2021 academic year, including the Summer Semester 2020, the Fall Semester 2020 and the Winter Semester 2021.

The University reserves the right to change without notice any information contained in this calendar, including but not limited to that related to tuition and other fees, standards of admission, course delivery or format, continuation of study, and the offering or requirements for the granting of, degrees or diplomas in any or all of its programs. The publication of this calendar does not bind the University to the provision of courses, programs, schedules of study, or facilities as listed herein.

The University will not be liable for any failure or delay in performance arising out of any cause or causes beyond its reasonable control. Such causes may include but are not limited to fire, strike, lock-out, inability to procure materials or trades, war, mass-casualty event, flood, local, regional or global outbreak of disease or other public health emergency, social distancing or quarantine restriction, legislative or regulatory requirements, unusually severe weather, failure of public utility or common carrier, or attacks or other malicious act, including but not limited to attacks on or through the internet, or any internet service, telecommunications provider or hosting facility.

In March 2020 the World Health Organization declared a global pandemic of the virus leading to COVID-19. The Governments of Canada, the Province of Ontario, and local Governments responded to the pandemic with legislative amendments, controls, orders, by-laws, requests and requirements (collectively, the “Governmental Response”). It is uncertain how long the pandemic, and the related Governmental Response, will continue, and it is unknown whether there may be a resurgence of the virus leading to COVID-19 or any mutation thereof (collectively, the “Virus”) and resulting or supplementary renewed Government Response. Without limiting the foregoing paragraph, the University shall not be liable for costs associated with any failure or delay in performance arising out of:

- a. the continued spread of the Virus;
- b. the continuation of or renewed Governmental Response to control the spread of the Virus; and
- c. a University decision, made on an organization-wide basis and in good faith, to control the spread of the Virus, even if exceeding the then current specific Government Response.

In particular, the COVID-19 pandemic may necessitate a revision of the format of course offerings such that courses are offered in whole or in part on an alternate delivery model to in-person classes. Tuition and mandatory fees have been set regardless of the method of instruction and will not be refunded in the event instruction occurs remotely for any part of the academic year.

Dates or times of performance including the Schedule of Dates may be extended as appropriate and the University will notify students promptly of the existence and nature of such delay and shall, so far as practicable, use reasonable efforts to minimize and mitigate any such delay or non-performance.

In the event of a discrepancy between a print version (downloaded) and the Web version, the Web version will apply,

Published by: Enrolment Services

Introduction

Collection, Use and Disclosure of Personal Information

Personal information is collected under the authority of the University of Guelph Act (1964), and in accordance with Ontario's Freedom of Information and Protection of Privacy Act (FIPPA) <http://www.e-laws.gov.on.ca/index.html>. This information is used by University officials in order to carry out their authorized academic and administrative responsibilities and also to establish a relationship for alumni and development purposes. Certain personal information is disclosed to external agencies, including the Ontario Universities Application Centre, the Ministry of Training, Colleges and Universities, and Statistics Canada, for statistical and planning purposes, and is disclosed to other individuals or organizations in accordance with the Office of Registrarial Services Departmental Policy on the Release of Student Information. For details on the use and disclosure of this information call the Office of Registrarial Services at the University at (519) 824-4120 or see <http://www.uoguelph.ca/registrar/registrar/index.cfm?index>.

Disclosure of Personal Information to the Ontario Ministry of Colleges and Universities

The University of Guelph is required to disclose personal information such as characteristics and educational outcomes to the Minister of Colleges and Universities under s. 15 of the Ministry of Training, Colleges and Universities Act, R.S.O. 1990, Chapter M.19, as amended. The Ministry collects this data for purposes including but not limited to planning, allocating and administering public funding to colleges, universities and other post-secondary educational and training institutions.

Amendments made to the Ministry of Training, Colleges and Universities Act, authorizing the collection and use of personal information from colleges and universities by the Minister which were set out in Schedule 5 of the Childcare Modernization Act, 2014, came into force on March 31, 2015.

The amendments strengthen the ability of the Minister to directly or indirectly collect and use personal information about students as required to conduct research and analysis, including longitudinal studies, and statistical activities conducted by or on behalf of the Ministry for purposes that relate to post-secondary education and training, including,

- i. understanding the transition of students from secondary school to post-secondary education and training,
- ii. understanding student participation and progress, mobility and learning and employment outcomes,
- iii. understanding linkages among universities, colleges, secondary schools and other educational and training institutions prescribed by regulation,
- iv. understanding trends in post-secondary education or training program choices made by students,
- v. understanding sources and patterns of student financial resources, including financial assistance and supports provided by government and post-secondary educational and training institutions,
- vi. planning to enhance the affordability and accessibility of post-secondary education and training and the quality and effectiveness of the post-secondary sector,
- vii. identifying conditions or barriers that inhibit student participation, progress, completion and transition to employment or future post-secondary educational or training opportunities, and
- viii. developing key performance indicators.

Information that the University is required to provide includes but is not limited to: first, middle and last name, Ontario Educational Number, citizenship, date of birth, gender, first three digits of a student's postal code, mother tongue, degree program and major(s) in which the student is enrolled, year of study and whether the student has transferred from another institution.

Further information on the collection and use of student-level enrolment-related data can be obtained from the Ministry of Colleges and Universities website: <https://www.ontario.ca/page/ministry-colleges-universities> (English) or <https://www.ontario.ca/fr/page/ministere-des-colleges-et-universites> (French) or by writing to the Director, Postsecondary Finance and Information Management Branch, Postsecondary Education Division, 7th Floor, Mowat Block, 900 Bay Street, Toronto, ON M7A 1L2.

An update on Institutional and Ministry of Training, Colleges and Universities Act Notice of Disclosure Activities is posted at <https://www.ontario.ca/page/ministry-colleges-universities>. Frequently Asked Questions related to the Ministry's enrolment and OEN data activities are also posted at: <http://www.tcu.gov.on.ca/pepg/publications/NoticeOfCollection.pdf>

Authority to Disclose Personal Information to Statistics Canada

The Ministry of Colleges and Universities discloses student-level enrolment-related data it collects from the colleges and universities as required by Statistics Canada in accordance with Section 13 of the Federal Statistics Act. This gives the Ministry authority to disclose personal information in accordance with s. 42(1) (e) of FIPPA

Notification of Disclosure of Personal Information to Statistics Canada

For further information, please see the Statistics Canada's website at <http://www.statcan.ca> and Section XIV Statistics Canada.

Address for University Communication

Depending on the nature and timing of the communication, the University may use one of these addresses to communicate with students. Students are, therefore, responsible for checking all of the following on a regular basis:

Email Address

The University issued email address is considered an official means of communication with the student and will be used for correspondence from the University. Students are responsible for monitoring their University-issued email account regularly. See Section I--Statement of Students' Academic Responsibilities for more information.

Home Address

Students are responsible for maintaining a current mailing address with the University. Address changes can be made, in writing, through Enrolment Services.

Name Changes

The University of Guelph is committed to the integrity of its student records, therefore, each student is required to provide either on application for admission or on personal data forms required for registration, the student's complete, legal name. Any requests to change a name, by means of alteration, deletion, substitution or addition, must be accompanied by appropriate supporting documentation.

Student Confidentiality and Release of Student Information Policy Excerpt

The University undertakes to protect the privacy of each student and the confidentiality of the student's record. To this end the University shall refuse to disclose personal information to any person other than the individual to whom the information relates where disclosure would constitute an unjustified invasion of the personal privacy of that person or of any other individual. All members of the University community must respect the confidential nature of the student information which they acquire in the course of their work.

Complete policy at <https://uoguelph.civicweb.net/document/68892/ORSInfoReleasePolicy060610.pdf?handle=FF982F8A9AEA4076BE4F3D88147172B8>.

Learning Outcomes

On December 5, 2012, the University of Guelph Senate approved five University-wide Learning Outcomes as the basis from which to guide the development of undergraduate degree programs, specializations and courses:

1. Critical and Creative Thinking
2. Literacy
3. Global Understanding
4. Communicating
5. Professional and Ethical Behaviour

These learning outcomes are also intended to serve as a framework through which our educational expectations are clear to students and the broader public; and to inform the process of outcomes assessment through the quality assurance process (regular reviews) of programs and departments.

An on-line guide to the learning outcomes, links to the associated skills, and detailed rubrics designed to support the development and assessment of additional program and discipline-specific outcomes, are available for reference on the [Learning Outcomes website](#).

1. Critical and Creative Thinking

Critical and creative thinking is a concept in which one applies logical principles, after much inquiry and analysis, to solve problems with a high degree of innovation, divergent thinking and risk taking. Those mastering this outcome show evidence of integrating knowledge and applying this knowledge across disciplinary boundaries. Depth and breadth of understanding of disciplines is essential to this outcome.

In addition, **Critical and Creative Thinking** includes, but is not limited to, the following outcomes: **Inquiry and Analysis; Problem Solving; Creativity; and Depth and Breadth of Understanding.**

2. Literacy

Literacy is the ability to extract information from a variety of resources, assess the quality and validity of the material, and use it to discover new knowledge. The comfort in using quantitative literacy also exists in this definition, as does using technology effectively and developing visual literacy.

In addition, **Literacy** includes, but is not limited to, the following outcomes: **Information Literacy, Quantitative Literacy, Technological Literacy, and Visual Literacy.**

3. Global Understanding:

Global understanding encompasses the knowledge of cultural similarities and differences, the context (historical, geographical, political and environmental) from which these arise, and how they are manifest in modern society. Global understanding is exercised as civic engagement, intercultural competence and the ability to understand an academic discipline outside of the domestic context.

In addition, **Global Understanding** includes, but is not limited to, the following outcomes: **Global Understanding, Sense of Historical Development, Civic Knowledge and Engagement, and Intercultural Competence.**

4. Communicating

Communicating is the ability to interact effectively with a variety of individuals and groups, and convey information successfully in a variety of formats including oral and written communication. Communicating also comprises attentiveness and listening, as well as reading comprehension. It includes the ability to communicate and synthesize information, arguments, and analyses accurately and reliably.

In addition, **Communicating** includes, but is not limited to, the following outcomes: **Oral Communication, Written Communication, Reading Comprehension, and Integrative Communication.**

5. Professional and Ethical Behaviour

Professional and ethical behaviour requires the ability to accomplish the tasks at hand with proficient skills in teamwork and leadership, while remembering ethical reasoning behind all decisions. The ability for organizational and time management skills is essential in bringing together all aspects of managing self and others. Academic integrity is central to mastery in this outcome.

In addition, **Professional and Ethical Behaviour** includes, but is not limited to, the following outcomes: **Teamwork, Ethical Reasoning, Leadership, and Personal Organization and Time Management**

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Bachelor of Bio-Resource Management Degree (B.B.R.M.)

The University of Guelph offers a 20.00 credit program, normally completed over 8 semesters, leading to a Bachelor of Bio-Resource Management degree (B.B.R.M.).

This degree is a unique blend of applied and theoretical learning, with an emphasis on experiential learning opportunities. This degree offers three majors: Environmental Management, Equine Management and Food Industry Management.

Program Information

The Bachelor of Bio-Resource Management degree program combines business studies and technical training with a strong emphasis on hands-on learning. A solid foundation in applied aspects of science, technology and business provides graduates with sufficient breadth and expertise to become competent managers in the environmental or food industry fields. Students begin studying in one of the following management majors during the first semester: Environmental Management, Equine Management or Food Industry Management.

Students will be encouraged to integrate their academic program with a well-planned series of employment activities in the summer months and to develop their leadership and interpersonal skills in on-campus and community activities. There is a strong commitment in the curriculum to personal development and students are encouraged to identify goals that they wish to accomplish throughout their university career.

Academic Advising and Counselling

Program Counselling

The Bachelor of Bio-Resource Program Counsellor is available to assist in-course students who require information or advice about their program or other academic regulations and who seek information about resources available to students. For information about how to contact a program counsellor, and for more information about program counselling, see Section VII -- Academic Counselling of the current Undergraduate Calendar.

Departmental Advising

On entering the program all students are assigned to a faculty advisor who will mentor them throughout their studies. The faculty advisor is familiar with the academic requirements of the program and is aware of career opportunities. Students are strongly encouraged to attend all meetings called by their advisor, and to set up individual meetings with them when they have questions or concerns about their performance or progress in the program.

Continuation of Study

Students are advised to consult the regulations for Continuation of Study which are outlined in detail in Section VIII -- Undergraduate Degree Regulations & Procedures in the current calendar.

Conditions for Graduation

To qualify for the degree Bachelor of Bio-Resource Management, the student must successfully complete a minimum of 20.00 credits as set out in the Schedule of Studies as listed. In addition, students must meet the continuation of study requirements at the time of graduation and have a minimum cumulative average of 60%.

Schedule of Studies

Courses specified in the Schedule of Studies are required courses and must be successfully completed. A full time course load normally includes 2.50 credits.

B.B.R.M. Program Regulations

Recommendations

Students entering Environmental Management or Equine Management who are deficient in U level Mathematics or Chemistry should consult with the program counsellor.

Environmental Management Major (EM)

School of Environmental Sciences and Department of Food, Agricultural and Resource Economics, Ontario Agricultural College

The major in Environmental Management focuses on the development of leaders in the areas of environmental science and technology. The program combines a solid background in environmental science and management with business, using a mix of theoretical and applied study. The flexibility provided in semesters 6 through 8 permits students to develop their understanding of specific areas of environmental science and business or take a variety of areas within the discipline. This flexibility also allows students to participate in international exchanges and semesters abroad. Students have the opportunity to incorporate a variety of field trips, experiential learning in the workplace and independent research projects into their program.

This major will require the completion of 20.00 credits: 12.00 from required courses, 6.00 from restricted electives, and 2.00 free electives. Of these credits, a minimum of 6.00 credits are required at the 3000 level or higher, of which at least 2.00 credits must be at the 4000 level.

Semester 1

| | | |
|-----------|--------|--------------------------|
| BIOL*1070 | [0.50] | Discovering Biodiversity |
| CHEM*1040 | [0.50] | General Chemistry I |

| | | |
|-----------|--------|--|
| ENVS*1030 | [1.00] | Introduction to Environmental Sciences |
| MGMT*2150 | [0.50] | Introduction to Canadian Business Management |

Semester 2

| | | |
|-----------|--------|--|
| ACCT*1220 | [0.50] | Introductory Financial Accounting |
| BIOL*1090 | [0.50] | Introduction to Molecular and Cellular Biology |
| FARE*1040 | [1.00] | Intro to Environmental Economics, Law & Policy |
| HROB*2090 | [0.50] | Individuals and Groups in Organizations |

Semester 3

| | | |
|-----------|--------|---|
| BIOL*2060 | [0.50] | Ecology |
| ENVS*2060 | [0.50] | Soil Science |
| ENVS*2230 | [0.50] | Communications in Environmental Science |
| FARE*2700 | [0.50] | Survey of Natural Resource Economics |
| GEOG*2480 | [0.50] | Mapping and GIS |

Semester 4

| | | |
|-----------|--------|---|
| ENVM*3500 | [1.00] | Environmental Management Integrated Project |
| ENVS*2040 | [0.50] | Plant Health and the Environment |
| ENVS*2080 | [0.50] | Introduction to Environmental Microbiology |

0.50 electives or restricted electives

Semester 5

| | | |
|-----------|--------|-----------------------------------|
| GEOG*2420 | [0.50] | The Earth From Space |
| One of: | | |
| GEOG*2460 | [0.50] | Analysis in Geography |
| STAT*2060 | [0.50] | Statistics for Business Decisions |

1.50 electives or restricted electives

Semester 6

| | | |
|-----------|--------|--------------------------------|
| ENVS*3020 | [0.50] | Pesticides and the Environment |
| ENVS*3060 | [0.50] | Groundwater |

1.50 electives or restricted electives

Semester 7

2.50 electives or restricted electives

Semester 8

2.50 electives or restricted electives

Restricted Electives

Students must successfully complete a minimum of 6.00 credits at the 3000 level or higher, of which at least 2.00 credits must be at the 4000 level. Those credits at the 3000 level or above selected to satisfy lists A, B, and C below will be applied to satisfy these minimum credit requirements.

Students should note that some restricted electives require other courses not included among the required courses for the major as prerequisites. Students should consult the most recent undergraduate calendar for specific requirements.

Students should consult with a faculty advisor before Semester 4 in planning their restricted elective choices. Students are advised to pay particular attention to prerequisite requirements when choosing individual courses and seek advice as needed.

1. Students must select a minimum of 6.50 credits from the following lists of restricted electives.

List A

Students must select a minimum of 3.50 credits from any of the following courses without regard to group of which at least 1.00 credits must be at the 4000 level:

| | | |
|--|--------|--|
| Aquatic Science: | | |
| BIOL*3450 | [0.50] | Introduction to Aquatic Environments |
| CHEM*3360 | [0.50] | Environmental Chemistry and Toxicology |
| EDRD*3450 | [0.50] | Watershed Planning Practice |
| ENVS*3220 | [0.50] | Terrestrial Chemistry |
| ENVS*4030 | [0.50] | Ecology |
| ENVS*4370 | [0.50] | Natural and Anthropogenic Compounds in the Environment |
| GEOG*3610 | [0.50] | Environmental Hydrology |
| Atmospheric Science: | | |
| ENVS*2030 | [0.50] | Meteorology and Climatology |
| ENVS*2310 | [0.50] | Introduction to Biogeochemistry |
| ENVS*3340 | [0.50] | Environmental Data Analysis |
| GEOG*2110 | [0.50] | Climate and the Biophysical Environment |
| Conservation and Biodiversity Science: | | |
| BIOL*3060 | [0.50] | Populations, Communities & Ecosystems |
| BIOL*3130 | [0.50] | Conservation Biology |
| ENVS*2210 | [0.50] | Apiculture and Honey Bee Biology |
| ENVS*2330 | [0.50] | Current Issues in Ecosystem Science and Biodiversity |
| ENVS*3000 | [0.50] | Nature Interpretation |
| ENVS*3010 | [0.50] | Climate Change Biology |
| ENVS*3090 | [0.50] | Insect Diversity and Biology |
| ENVS*3230 | [0.50] | Agroforestry Systems |
| ENVS*3250 | [0.50] | Forest Health and Disease |

| | | |
|------------------------------------|--------|---|
| ENVS*3270 | [0.50] | Forest Biodiversity |
| ENVS*4070 | [0.50] | Pollinator Conservation |
| ENVS*4230 | [0.50] | Biology of Aquatic Insects |
| ENVS*4260 | [0.50] | Field Entomology |
| ENVS*4350 | [0.50] | Forest Ecology |
| GEOG*3320 | [0.50] | Food Systems: Issues in Security and Sustainability |
| Ecosystem and Resource Management: | | |
| BIOL*4500 | [0.50] | Natural Resource Policy Analysis |
| ENVS*2120 | [0.50] | Introduction to Environmental Stewardship |
| ENVS*2240 | [0.50] | Fundamentals of Environmental Geology |
| ENVS*4000 | [0.50] | Toxicological Risk Assessment |
| ENVS*4390 | [1.00] | Soil Variability and Land Evaluation |
| GEOG*2210 | [0.50] | Environment and Resources |
| GEOG*3020 | [0.50] | Global Environmental Change |
| GEOG*3110 | [0.50] | Biotic and Natural Resources |
| GEOG*3210 | [0.50] | Management of the Biophysical Environment |
| GEOG*3420 | [0.50] | Remote Sensing of the Environment |
| GEOG*3480 | [0.50] | GIS and Spatial Analysis |
| GEOG*4110 | [1.00] | Environmental Systems Analysis |
| GEOG*4220 | [0.50] | Local Environmental Management |
| GEOG*4230 | [0.50] | Environmental Impact Assessment |
| Plant Health: | | |
| ENVS*3040 | [0.50] | Natural Chemicals in the Environment |
| ENVS*3210 | [0.50] | Plant Pathology |
| ENVS*4100 | [0.50] | Integrated Management of Invasive Insect Pests |
| ENVS*4180 | [0.50] | Insecticide Biological Activity and Resistance |
| ENVS*4190 | [0.50] | Biological Activity of Herbicides |
| PBIO*4530 | [0.50] | Plants and Environmental Pollution |
| Soil and Nutrient Management: | | |
| ENVS*3080 | [0.50] | Soil and Water Conservation |
| ENVS*3310 | [0.50] | Soil Biodiversity and Ecosystem Function |
| ENVS*4090 | [0.50] | Soil Management |
| ENVS*4160 | [0.50] | Soil and Nutrient Management |
| ENVS*4320 | [1.00] | Laboratory and Field Methods in Soil Biodiversity |
| ENVS*4390 | [1.00] | Soil Variability and Land Evaluation |

List B

Students must select a minimum of 1.50 credits from list B. At least 0.50 credits must be at the 4000 level:

| | | |
|--|--------|---|
| Accounting | | |
| ACCT*2230 | [0.50] | Management Accounting |
| ACCT*3230 | [0.50] | Intermediate Management Accounting |
| ACCT*1240 | [0.50] | Applied Financial Accounting |
| ACCT*4230 | [0.50] | Advanced Management Accounting |
| Business and Management: | | |
| MGMT*3020 | [0.50] | Corporate Social Responsibility |
| MGMT*3320 | [0.50] | Financial Management |
| Food, Agricultural and Resource Economics: | | |
| FARE*2410 | [0.50] | Agri-food Markets and Policy |
| FARE*3170 | [0.50] | Cost-Benefit Analysis |
| FARE*3310 | [0.50] | Operations Management |
| FARE*4290 | [0.50] | Land Economics |
| FARE*4310 | [0.50] | Resource Economics |
| FARE*4360 | [0.50] | Marketing Research |
| FARE*4370 | [0.50] | Food & Agri Marketing Management |
| Leadership and Communications: | | |
| EDRD*2020 | [0.50] | Interpersonal Communication |
| EDRD*3140 | [0.50] | Organizational Communication |
| EDRD*3400 | [0.50] | Sustainable Communities |
| EDRD*4120 | [0.50] | Leadership Development in Small Organizations |
| HROB*2010 | [0.50] | Foundations of Leadership |
| HROB*4010 | [0.50] | Leadership Certificate Capstone |

List C

Students may also select any of the following courses as* restricted electives:

| | | |
|-------------|--------|---|
| AGR*3450** | [0.50] | Research Methods in Agricultural Science |
| AGR*3500 | [0.50] | Experiential Education |
| AGR*4450** | [1.00] | Research Project I |
| AGR*4460** | [1.00] | Research Project II |
| AGR*4600 | [1.00] | Agriculture and Food Issues Problem Solving |
| BIOC*2580 | [0.50] | Introduction to Biochemistry |
| CHEM*1050 | [0.50] | General Chemistry II |
| ECON*1100 | [0.50] | Introductory Macroeconomics |
| ENVS*4410** | [0.50] | Introduction to Advanced Independent Research |
| ENVS*4420** | [0.50] | Advanced Independent Research |
| ENVS*4430** | [1.00] | Advanced Independent Research |
| FARE*4550** | [0.50] | Independent Studies I |
| FARE*4560** | [0.50] | Independent Studies II |

| | | |
|-----------|--------|---|
| GEOG*1300 | [0.50] | Introduction to the Biophysical Environment |
| GEOG*1350 | [0.50] | Earth: Hazards and Global Change |

* Students considering graduate studies are encouraged to take at least 1.00 of these credits.

Equine Management Major (EQM)

Department of Animal Biosciences and the Department of Food, Agricultural and Resource Economics, Ontario Agricultural College

The major in Equine Management focuses on the development of leaders with a genuine regard for all horses and their well-being, a conscious concern for the environment, and a passionate interest in all aspects of the horse industry. The program combines a solid background in business, biological sciences and equine management through practical and theoretical experience. It provides in-depth understanding of the economic, environmental and social dimensions of all equine disciplines with a broad and current knowledge of horse industry issues and develops the skills to gather, access, interpret and apply industry data. In consultation with the faculty advisor, students can participate in international exchange or semester abroad opportunities in semester 6. Students can also incorporate a variety of field trips, experiential learning in the workplace and independent research projects into their program.

This major will require the completion of 20.00 credits: 13.50 from required courses, 5.00 from restricted electives and 1.50 electives. Of these credits, a minimum of 6.00 credits are required at the 3000-level or higher, of which at least 2.00 credits must be at the 4000-level.

Semester 1 - Fall

| | | |
|-----------|--------|---|
| BIOL*1050 | [0.50] | Biology of Plants & Animals in Managed Ecosystems |
| BIOL*1090 | [0.50] | Introduction to Molecular and Cellular Biology |
| ECON*1050 | [0.50] | Introductory Microeconomics |
| EQN*1010 | [1.00] | Introduction to Equine Management |

Semester 2 - Winter

| | | |
|-----------|--------|---------------------------------------|
| ACCT*1220 | [0.50] | Introductory Financial Accounting |
| ANSC*1210 | [1.00] | Principles of Animal Care and Welfare |
| EQN*2040 | [0.50] | Equine Anatomy and Physiology |

One of:

| | | |
|-----------|--------|---------------------|
| CHEM*1040 | [0.50] | General Chemistry I |
| CHEM*1100 | [0.50] | Chemistry Today |

Semester 3 - Fall

| | | |
|-----------|--------|-------------------------------------|
| ACCT*2230 | [0.50] | Management Accounting |
| ENVS*2060 | [0.50] | Soil Science |
| EQN*2080 | [1.00] | Equine Event Management |
| EQN*2200 | [0.50] | Equine Industry Trends and Issues I |

Semester 4 - Winter

| | | |
|----------|--------|---------------------------------------|
| EQN*2050 | [0.50] | Introduction to Equine Nutrition |
| EQN*2150 | [0.50] | Equine Facility Management and Design |

1.50 electives or restricted electives

Semester 5 - Fall

| | | |
|-----------|--------|-----------------------------------|
| ANSC*3080 | [0.50] | Agricultural Animal Physiology |
| CROP*3340 | [0.50] | Managed Grasslands |
| EQN*3250 | [0.50] | Equine Exercise Physiology |
| STAT*2060 | [0.50] | Statistics for Business Decisions |

0.50 electives or restricted electives

Semester 6 - Winter

| | | |
|----------|--------|--------------------------|
| EQN*3070 | [0.50] | Equine Health Management |
|----------|--------|--------------------------|

2.00 electives or restricted electives

Semester 7 - Fall

| | | |
|----------|--------|--------------------------------------|
| EQN*4400 | [0.50] | Equine Industry Trends and Issues II |
| EQN*4500 | [1.00] | Equine Integrated Project |

1.00 electives or restricted electives

Semester 8 - Winter

| | | |
|----------|--------|---------------------------|
| EQN*3060 | [0.50] | Equine Reproduction |
| EQN*4020 | [0.50] | Advanced Equine Nutrition |

1.50 electives or restricted electives

Restricted Electives

Students must select a minimum of 5.00 credits from the following four lists of restricted electives.

Students should note that some restricted electives require other courses not included among the required courses for the major as prerequisites. Students should consult the most recent undergraduate calendar for specific requirements.

- Students must select a minimum of 1.50 credits from any of the following lists (grouped by topic areas):

| | | |
|-----------------|--------|--|
| Animal Biology: | | |
| AGR*2350 | [0.50] | Animal Production Systems, Health and Industry |
| ANSC*3090 | [0.50] | Principles of Animal Behaviour |

| | | |
|------------------------------|--------|---|
| ANSC*4090 | [0.50] | Applied Animal Behaviour and Welfare |
| ANSC*4100 | [0.50] | Applied Environmental Physiology and Animal Housing |
| ANSC*4490 | [0.50] | Applied Endocrinology |
| ANSC*4650 | [0.50] | Comparative Immunology |
| POPM*4230 | [0.50] | Animal Health |
| Genetics: | | |
| MBG*2400 | [0.50] | Fundamentals of Plant and Animal Genetics |
| MBG*3060 | [0.50] | Quantitative Genetics |
| MBG*4020 | [0.50] | Genetics of Companion Animals |
| MBG*4030 | [0.50] | Animal Breeding Methods and Applications |
| Pasture and Turf Management: | | |
| ENVS*3080 | [0.50] | Soil and Water Conservation |
| ENVS*3140 | [0.50] | Management of Turfgrass Diseases |
| One of: | | |
| ENVS*4090 | [0.50] | Soil Management |
| ENVS*4160 | [0.50] | Soil and Nutrient Management |
| HORT*2450 | [0.50] | Introduction to Turfgrass Science |
| HORT*3050 | [0.50] | Management of Turfgrass Insect Pests and Weeds |
| HORT*4450 | [0.50] | Advanced Turfgrass Science |
| Advanced Nutrition: | | |
| BIOC*2580 | [0.50] | Introduction to Biochemistry |
| CHEM*1050 | [0.50] | General Chemistry II |
| NUTR*3210 | [0.50] | Fundamentals of Nutrition |

2. Students must select a minimum of 1.50 credits from any of the following lists (grouped by topic areas):

| | | |
|---|--------|--|
| Accounting: | | |
| ACCT*3230 | [0.50] | Intermediate Management Accounting |
| ACCT*4230 | [0.50] | Advanced Management Accounting |
| Business and Management: | | |
| HROB*2010 | [0.50] | Foundations of Leadership |
| HROB*2090 | [0.50] | Individuals and Groups in Organizations |
| HROB*4010 | [0.50] | Leadership Certificate Capstone |
| MGMT*2150 | [0.50] | Introduction to Canadian Business Management |
| MGMT*3020 | [0.50] | Corporate Social Responsibility |
| MGMT*3320 | [0.50] | Financial Management |
| Food, Agricultural and Resource Economics : | | |
| FARE*2700 | [0.50] | Survey of Natural Resource Economics |
| FARE*3310 | [0.50] | Operations Management |
| FARE*3170 | [0.50] | Cost-Benefit Analysis |
| FARE*4220 | [0.50] | Advanced Agribusiness Management |
| FARE*4360 | [0.50] | Marketing Research |
| FARE*4370 | [0.50] | Food & Agri Marketing Management |
| FARE*4290 | [0.50] | Land Economics |
| FARE*4550 | [0.50] | Independent Studies I |
| Marketing: | | |
| MCS*1000 | [0.50] | Introductory Marketing |
| MCS*2020 | [0.50] | Information Management |
| MCS*2600 | [0.50] | Fundamentals of Consumer Behaviour |
| MCS*3000 | [0.50] | Advanced Marketing |
| MCS*3040 | [0.50] | Business and Consumer Law |
| MCS*3620 | [0.50] | Marketing Communications |

3. Students must select a minimum of 1.00 credits from:

| | | |
|-----------|--------|---|
| AGR*3010 | [0.50] | Special Studies in Agricultural Science I |
| AGR*4010 | [0.50] | Special Studies in Agricultural Science II |
| AGR*4600 | [1.00] | Agriculture and Food Issues Problem Solving |
| AGR*4450 | [1.00] | Research Project I |
| AGR*4460 | [1.00] | Research Project II |
| ANSC*4610 | [0.50] | Critical Analysis in Animal Science |

4. Students may also count any of the following courses as restricted electives:

| | | |
|-----------|--------|---|
| AGR*3500 | [0.50] | Experiential Education |
| ECON*1100 | [0.50] | Introductory Macroeconomics |
| EDRD*2020 | [0.50] | Interpersonal Communication |
| EDRD*3050 | [0.50] | Agricultural Communication |
| EDRD*3140 | [0.50] | Organizational Communication |
| EDRD*3400 | [0.50] | Sustainable Communities |
| EDRD*4120 | [0.50] | Leadership Development in Small Organizations |
| EQN*2500 | [0.50] | Equine Field Course |
| PSYC*1000 | [0.50] | Introduction to Psychology |

Food Industry Management (FIM)

Department of Food, Agricultural and Resource Economics and Department of Food Science, Ontario Agricultural College

This major focuses on the development of leaders in the areas of Food Industry Innovation and Operations. The program combines a solid background in food science, economics and business, using a mix of theoretical and applied study. Students in this major will be able to create a curriculum uniquely tailored to their career goals. The flexibility provided in semesters 5 through 8 enables students to develop their understanding of specific areas of food science and business. Student participation in international exchanges and international summer research programs is encouraged and supported through academic advising on course selection and substitution. Students have the opportunity to incorporate a variety of field trips, experiential learning in the workplace and independent research projects into their program. The combination of a solid understanding of food science and current business practice with specialized skills and experience provided by this program is unique and greatly valued by prospective employers in this important sector of the Canadian and global economies.

This major will require the completion of 20.00 credits: 14.50 credits of required courses, 3.00 credits from restricted electives, and 2.50 credits of free electives. Of these credits, a minimum of 6.00 credits are required at the 3000 level or higher, of which at least 3.00 credits must be at the 4000 level.

Semester 1

| | | |
|-----------|--------|---|
| ACCT*1220 | [0.50] | Introductory Financial Accounting |
| BIOL*1080 | [0.50] | Biological Concepts of Health |
| CHEM*1040 | [0.50] | General Chemistry I |
| HROB*2090 | [0.50] | Individuals and Groups in Organizations |
| MATH*1030 | [0.50] | Business Mathematics |

Semester 2

| | | |
|-----------|--------|--|
| BIOL*1090 | [0.50] | Introduction to Molecular and Cellular Biology |
| CHEM*1050 | [0.50] | General Chemistry II |
| FARE*1400 | [1.00] | Economics of the Agri-Food System |

0.50 electives

Semester 3

| | | |
|-----------|--------|--|
| BIOC*2580 | [0.50] | Introduction to Biochemistry |
| FOOD*2150 | [0.50] | Introduction to Nutritional and Food Science |
| MCS*2020 | [0.50] | Information Management |
| MICR*2420 | [0.50] | Introduction to Microbiology |
| STAT*2060 | [0.50] | Statistics for Business Decisions |

Semester 4

| | | |
|-----------|--------|-------------------------------|
| ACCT*2230 | [0.50] | Management Accounting |
| ECON*1100 | [0.50] | Introductory Macroeconomics |
| FOOD*2100 | [0.50] | Communication in Food Science |
| FOOD*2620 | [0.50] | Food Engineering Principles |

0.50 electives or restricted electives

Semester 5

| | | |
|-----------|--------|-----------------------|
| FARE*3310 | [0.50] | Operations Management |
| FOOD*3140 | [0.50] | Food Processing I |
| FOOD*3240 | [0.50] | Food Microbiology |

1.00 electives or restricted electives

Semester 6

| | | |
|-----------|--------|---------------------------|
| FOOD*3170 | [0.50] | Food Processing II |
| HROB*2010 | [0.50] | Foundations of Leadership |

One of:

| | | |
|-----------|--------|----------------------------------|
| PHIL*2120 | [0.50] | Ethics |
| PHIL*2600 | [0.50] | Business and Professional Ethics |

1.00 electives or restricted electives

Semester 7

| | | |
|-----------|--------|-----------------------------------|
| FARE*3320 | [0.50] | Supply and Value Chain Management |
| FARE*4370 | [0.50] | Food & Agri Marketing Management |

1.50 electives or restricted electives

Semester 8

| | | |
|-----------|--------|------------------------------------|
| FARE*4330 | [0.50] | Advanced Operations Management |
| FARE*4380 | [0.50] | Retailing, Merchandising and Sales |
| FOOD*4310 | [0.50] | Food Safety Management Systems |

1.00 electives or restricted electives

Restricted Electives

Students should note that some restricted electives require other courses not included among the required courses for the major as prerequisites. Students should consult the most recent undergraduate calendar for specific requirements. Students must take a minimum of 3.00 credits from restricted electives.

A minimum of 1.00 credits from the following list:

| | | |
|-----------|--------|---|
| FOOD*4070 | [0.50] | Food Packaging |
| FOOD*4110 | [0.50] | Meat and Poultry Processing |
| FOOD*4400 | [0.50] | Dairy Processing |
| FOOD*4520 | [0.50] | Utilization of Cereal Grains for Human Food |

A minimum of 1.00 credits from the following list:

| | | |
|-----------|--------|---|
| FARE*3000 | [0.50] | International Food Sector and Policy Analysis |
|-----------|--------|---|

| | | |
|-----------|--------|---|
| FARE*3170 | [0.50] | Cost-Benefit Analysis |
| FARE*4360 | [0.50] | Marketing Research |
| FARE*4500 | [0.50] | Decision Science |
| FOOD*4020 | [0.50] | Quality Management in the Food Industry |
| POLS*3470 | [0.50] | Business-Government Relations in Canada |

Students may also count any of the courses from the following list as restricted electives:

| | | |
|-----------|--------|-------------------------------------|
| FOOD*3050 | [0.50] | Food Chemistry I |
| FOOD*3700 | [0.50] | Sensory Evaluation of Foods |
| FOOD*4090 | [0.50] | Functional Foods and Nutraceuticals |
| FOOD*4260 | [0.50] | Food Product Development I |
| FOOD*4270 | [0.50] | Food Product Development II |

Students may also count any of the research/experiential learning/independent study courses from the following list as restricted electives:

| | | |
|-----------|--------|---|
| AGR*3010 | [0.50] | Special Studies in Agricultural Science I |
| AGR*3500 | [0.50] | Experiential Education |
| FARE*4550 | [0.50] | Independent Studies I |
| FARE*4560 | [0.50] | Independent Studies II |
| FOOD*4220 | [0.50] | Topics in Food Science |
| FOOD*4230 | [0.50] | Research in Food Science |

Food Industry Management (Co-op) (FIM:C)

Department of Food, Agricultural and Resource Economics and Department of Food Science, Ontario Agricultural College

This major focuses on the development of leaders in the areas of Food Industry Innovation and Operations. The program combines a solid background in food science, economics and business, using a mix of theoretical and applied study. Students in this major will be able to create a curriculum uniquely tailored to their career goals. The flexibility provided in semesters 5 through 8 enables students to develop their understanding of specific areas of food science and business. Student participation in international exchanges and international summer research programs is encouraged and supported through academic advising on course selection and substitution. Students have the opportunity to incorporate a variety of field trips, experiential learning in the workplace and independent research projects into their program. The combination of a solid understanding of food science and current business practice with specialized skills and experience provided by this program is unique and greatly valued by prospective employers in this important sector of the Canadian and global economies.

A principal aim of the Co-op program in Food Industry Management is to facilitate the transition of students from academic studies to a professional career by enhancing the integration of theory and practice.

Program Requirements

The Co-op program in Food Industry Management is a five year program, including 4 work terms. Students must complete a Fall, Winter and Summer work term and must follow the academic work schedule as outlined below (also found on the Co-operative Education website: <https://www.recruitguelph.ca/cecs/>). Please refer to the Co-operative Education program policy with respect to adjusting this schedule.

Students are eligible to participate in a maximum two (2) summer employment processes and must follow the academic work schedule as outlined on the Co-operative Education website: <https://www.recruitguelph.ca/cecs/>).

Food Industry Management Academic and Co-op Work Term Schedule

| Year | Fall | Winter | Summer |
|------|----------------------------------|------------------------|------------------------|
| 1 | Academic Semester 1 | Academic Semester 2 | Off |
| 2 | Academic Semester 3 COOP*1100 | Academic Semester 4 | COOP*1000 Work Term I |
| 3 | Academic Semester 5 | Academic Semester 6 | COOP*2000 Work Term II |
| 4 | COOP*3000 Work Term III | COOP*4000 Work Term IV | Off |
| 5 | Academic Semester 7 | Academic Semester 8 | N/A |

To be eligible to continue in the Co-op program, they must meet a minimum 70% cumulative average requirement after second semester, as well as meet all work term requirements. Please refer to the Co-operative Education program policy with respect to work term performance grading and work term report grading.

For additional program information students should consult with their Co-op Co-ordinator and Co-op Faculty Advisor, listed on the Co-operative Education web site.

Credit Summary (21.50 Total Credits)*

14.50 - Required Core Courses

3.00 - Restricted Electives

2.50 - Free Electives

1.50 - Co-op Work Terms

Students should note that a minimum of 6.00 credits of their BBRM degree are required at the 3000 level or higher, of which at least 3.00 credits must be at the 4000 level.

Note: A minimum of three Co-op work terms including a Summer, Fall, and Winter are necessary to complete the Co-op requirement. *A fourth work term is optional and if completed the total number of credits will equal 22.00.

Semester 1 - Fall

| | | |
|-----------|--------|---|
| ACCT*1220 | [0.50] | Introductory Financial Accounting |
| BIOL*1080 | [0.50] | Biological Concepts of Health |
| CHEM*1040 | [0.50] | General Chemistry I |
| HROB*2090 | [0.50] | Individuals and Groups in Organizations |
| MATH*1030 | [0.50] | Business Mathematics |

Semester 2 - Winter

| | | |
|----------------|--------|--|
| BIOL*1090 | [0.50] | Introduction to Molecular and Cellular Biology |
| CHEM*1050 | [0.50] | General Chemistry II |
| FARE*1400 | [1.00] | Economics of the Agri-Food System |
| 0.50 electives | | |

Summer Semester

Off

Semester 3 - Fall

| | | |
|-----------|--------|--|
| BIOC*2580 | [0.50] | Introduction to Biochemistry |
| COOP*1100 | [0.00] | Introduction to Co-operative Education |
| FOOD*2150 | [0.50] | Introduction to Nutritional and Food Science |
| MCS*2020 | [0.50] | Information Management |
| MICR*2420 | [0.50] | Introduction to Microbiology |
| STAT*2060 | [0.50] | Statistics for Business Decisions |

Semester 4 - Winter

| | | |
|--|--------|-------------------------------|
| ACCT*2230 | [0.50] | Management Accounting |
| ECON*1100 | [0.50] | Introductory Macroeconomics |
| FOOD*2100 | [0.50] | Communication in Food Science |
| FOOD*2620 | [0.50] | Food Engineering Principles |
| 0.50 electives or restricted electives | | |

Summer Semester

| | | |
|-----------|--------|-------------------|
| COOP*1000 | [0.50] | Co-op Work Term I |
|-----------|--------|-------------------|

Semester 5 - Fall

| | | |
|--|--------|-----------------------|
| FARE*3310 | [0.50] | Operations Management |
| FOOD*3140 | [0.50] | Food Processing I |
| FOOD*3240 | [0.50] | Food Microbiology |
| 1.00 electives or restricted electives | | |

Semester 6 - Winter

| | | |
|-----------|--------|---------------------------|
| FOOD*3170 | [0.50] | Food Processing II |
| HROB*2010 | [0.50] | Foundations of Leadership |

One of:

| | | |
|-----------|--------|----------------------------------|
| PHIL*2120 | [0.50] | Ethics |
| PHIL*2600 | [0.50] | Business and Professional Ethics |

1.00 electives or restricted electives

Summer Semester

| | | |
|-----------|--------|--------------------|
| COOP*2000 | [0.50] | Co-op Work Term II |
|-----------|--------|--------------------|

Fall Semester

| | | |
|-----------|--------|---------------------|
| COOP*3000 | [0.50] | Co-op Work Term III |
|-----------|--------|---------------------|

Winter Semester

| | | |
|-----------|--------|--------------------|
| COOP*4000 | [0.50] | Co-op Work Term IV |
|-----------|--------|--------------------|

Summer Semester

Off

Semester 7 - Fall

| | | |
|-----------|--------|-----------------------------------|
| FARE*3320 | [0.50] | Supply and Value Chain Management |
| FARE*4370 | [0.50] | Food & Agri Marketing Management |

1.50 electives or restricted electives

Semester 8 - Winter

| | | |
|-----------|--------|------------------------------------|
| FARE*4330 | [0.50] | Advanced Operations Management |
| FARE*4380 | [0.50] | Retailing, Merchandising and Sales |
| FOOD*4310 | [0.50] | Food Safety Management Systems |

1.00 electives or restricted electives

Restricted Electives

Students should note that some restricted electives require other courses not included among the required courses for the major as prerequisites. Students should consult the most recent undergraduate calendar for specific requirements. Students must take a minimum of 3.00 credits from restricted electives.

A minimum of 1.00 credits from the following list:

| | | |
|-----------|--------|---|
| FOOD*4070 | [0.50] | Food Packaging |
| FOOD*4110 | [0.50] | Meat and Poultry Processing |
| FOOD*4400 | [0.50] | Dairy Processing |
| FOOD*4520 | [0.50] | Utilization of Cereal Grains for Human Food |

A minimum of 1.00 credits from the following list:

| | | |
|-----------|--------|---|
| FARE*3000 | [0.50] | International Food Sector and Policy Analysis |
| FARE*3170 | [0.50] | Cost-Benefit Analysis |
| FARE*4360 | [0.50] | Marketing Research |
| FARE*4500 | [0.50] | Decision Science |
| FOOD*4020 | [0.50] | Quality Management in the Food Industry |
| POLS*3470 | [0.50] | Business-Government Relations in Canada |

Students may also count any of the courses from the following list as restricted electives:

| | | |
|-----------|--------|-------------------------------------|
| FOOD*3050 | [0.50] | Food Chemistry I |
| FOOD*3700 | [0.50] | Sensory Evaluation of Foods |
| FOOD*4090 | [0.50] | Functional Foods and Nutraceuticals |
| FOOD*4260 | [0.50] | Food Product Development I |
| FOOD*4270 | [0.50] | Food Product Development II |

Students may also count any of the research/experiential learning/independent study courses from the following list as restricted electives:

| | | |
|-----------|--------|---|
| AGR*3010 | [0.50] | Special Studies in Agricultural Science I |
| AGR*3500 | [0.50] | Experiential Education |
| FARE*4550 | [0.50] | Independent Studies I |
| FARE*4560 | [0.50] | Independent Studies II |
| FOOD*4220 | [0.50] | Topics in Food Science |
| FOOD*4230 | [0.50] | Research in Food Science |