2011-2012 Undergraduate Calendar

The information published in this Undergraduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2011-2012 academic year, including the Summer Semester 2011, the Fall Semester 2011 and the Winter Semester 2012.

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.

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Disclaimer

University of Guelph 2011

The information published in this Undergraduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2011-2012 academic year, including the Summer Semester 2011, the Fall Semester 2011 and the Winter Semester 2012.

The University reserves the right to change without notice any information contained in this calendar, including fees, any rule or regulation pertaining to the standards for admission to, the requirements for the continuation of study in, and the requirements for the granting of degrees or diplomas in any or all of its programs. The publication of information in this calendar does not bind the University to the provision of courses, programs, schedules of studies, or facilities as listed herein.

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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.

Statistics Canada - Notification of Disclosure

For further information, please see Statistics Canada's web site 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 Undergraduate Program 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, his/her 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 his or her 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 http://www.uoguelph.ca/policies/pdf/ORSInfoReleasePolicy060610.pdf.

Table of Contents

Bachelor of Science in Agriculture [B.Sc.(Agr.)] 438
Program Information 438
Honours Agriculture (AGRS) 438
Agriculture (AGR) 439
Animal Science (ANSC) 440
Crop, Horticulture and Turfgrass Sciences (CHAT) 440
Organic Agriculture (OAGR) 441

Bachelor of Science in Agriculture [B.Sc.(Agr.)]

The B.Sc.(Agr.) degree program is a 4 year honours science program designed to provide a fundamental education in the science of agriculture. The curriculum includes courses in the agricultural sciences, the physical, biological and social sciences, and in the arts.

Program Information

Agricultural scientists must be effective communicators and problem solvers, self-directed in their learning, and have a global perspective of the agrifood systems. Students will be involved in co-operative group learning activities and will experience courses that are multidisciplinary and integrate the teaching activities of many faculty and departments.

Students will have the option of completing a broad agricultural program (honours agricultural science) or another major in which they take a minimum of 6.00 credits. The curriculum provides opportunities for students to select courses that will help them prepare for professional careers as entrepreneurs, scientists, marketing specialists, financial managers, technical advisors, or communication specialists. Students will have a comprehensive understanding of the food system when they graduate. They will be able to integrate their knowledge of production agriculture, environmental management, resource allocation and business management as it applies to the food system nationally and globally.

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 the philosophy of "whole person development" and students are encouraged to identify personal goals that they wish to accomplish in each of these areas of their development.

Graduates meet the educational requirements for membership in the Ontario Institute of Agrologists. The Ontario Institute of Agrologists is the professional organization in agriculture in the Province of Ontario. Professional institutes in the various provinces in Canada and the scientific societies in agriculture collectively comprise the Agricultural Institute of Canada. The program received full accreditation from the Agricultural Institute of Canada in April 2007.

B.Sc.(Agr.) Majors:

Animal Science

Crop, Horticulture and Turfgrass Science

Honours Agricultural Science

Organic Agriculture

Declaration of a Major

All students are admitted into an undeclared major upon entry. Students will be required to select a major by semester 3 through consultation with the Program Counsellor and Faculty Advisors. The course requirements are listed for each major in the following section.

Students may, with appropriate approvals, elect to complete Minors associated with other degree programs as listed in the undergraduate calendar.

Study Abroad

The B.Sc.(Agr.) degree program is similar in many respects to programs offered at faculties of agricultural science in other provinces in Canada. Students are strongly encouraged to consider studying for 1 or 2 semesters in other faculties of agricultural science in Canada and in selected countries around the world.

Students interested in studying at another institution should consult the B.Sc.(Agr.) Program Counsellor to discuss their plans, and refer to the scholarship section for financial support.

For more specific information on these opportunities refer to Section V--International Study in this calendar, or contact the OAC Dean's Office.

Doctor of Veterinary Medicine

Students in the B.Sc.(Agr.) program normally apply for admission to the D.V.M. program after semester 4 or later. Applications must be submitted to the Admissions Services, Office of Registrarial Services. Students should consult the D.V.M. Section of the calendar. Students who do not gain admission to the D.V.M. program are eligible to continue in the B.Sc.(Agr.) program through to graduation.

Students planning to enter the D.V.M. program are advised to include 12U biology, 12U chemistry, and 12U physics in addition to calculus in secondary school.

Continuation of Study

Students are advised to consult the regulations for continuation of study within the program which are outlined in detail in Section VIII--Undergraduate Degree Regulations & Procedures.

Conditions of Graduation

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

Honours Agriculture (AGRS)

Semester 1

AGR*1100	[0.50]	Introduction to the Agrifood Systems
BIOL*1070	[0.50]	Discovering Biodiversity
CHEM*1040	[0.50]	General Chemistry I
ECON*1050	[0.50]	Introductory Microeconomics
MATH*1080	[0.50]	Elements of Calculus I

Semester 2

AGR*1250	[0.50]	Agrifood System Trends & Issues
BIOL*1080	[0.50]	Biological Concepts of Health
BIOL*1090	[0.50]	Introduction to Molecular and Cellular Biology
CHEM*1050	[0.50]	General Chemistry II

0.50 electives

Semester 3

AGR*2320	[0.50]	Soils in Agroecosystems
AGR*2350	[0.50]	Animal Production Systems, Health and Industry
AGR*2400	[0.50]	Economics of the Canadian Food System
AGR*2470	[0.50]	Introduction to Plant Agriculture

0.50 restricted electives

Semester 4

NRS*3000	[0.50]	Environmental Issues in Agriculture and Landscape Management
STAT*2040	[0.50]	Statistics I

One of:

CROP*2110	[0.50]	Crop Ecology
HORT*3350	[0.50]	Woody Plant Production and Culture

One of:

ANSC*2340	[0.50]	Structure of Farm Animals
ANSC*3210	[0.50]	Principles of Animal Care and Welfare

0.50 restricted electives

Semester 5

FARE*2700	[0.50]	Survey of Natural Resource Economics
FOOD*3090	[0.50]	Food Science and Human Nutrition

1.50 electives or restricted electives

Semester 6

EDRD*3400	[0.50]	Sustainable Communities

2.00 electives

Semester 7 & 8

Students must choose either Option A or B in Semester 7 and 8

Option A:

AGR*4500	[0.50]	Agrifood Industry Problem-Solving

4.50 electives

Option B

AGR*4450	[1.00]	Research Project I
AGR*4460	[1.00]	Research Project II

3.00 electives

Restricted Electives

1. 2 of the following Restricted Electives are required:

BIOC*2580	[0.50]	Introduction to Biochemistry
BOT*2100	[0.50]	Life Strategies of Plants
ECON*1100	[0.50]	Introductory Macroeconomics
ECON*2310	[0.50]	Intermediate Microeconomics
MBG*2040	[0.50]	Foundations in Molecular Biology and Genetics
NRS*2120	[0.50]	Introduction to Environmental Stewardship

2. A minimum of 7.00 credits must be at the 3000 level or higher, of which 5.00 credits must be in agricultural science and of which 3.50 credits must be at the 4000 level. Refer to Program Counsellor for list of agricultural science courses.
3. A humanities or social science course (0.50 credits) at the 2000 level or above from the College of Arts or College of Social and Applied Human Sciences.

Suggested Electives in Agricultural Sciences and Related Disciplines

Students who wish to concentrate in particular areas of Agricultural Sciences should consider selecting one of the following course groups.

Students should note that some suggested electives (marked by asterisks**) require other courses as prerequisites. Students should consult the most recent undergraduate calendar for specific requirements.

Agricultural Land Resources

General Recommendations:

EDRD*3450	[0.50]	Watershed Planning Practice
GEOG*2480	[0.50]	Mapping and GIS
GEOL*3060	[0.50]	Groundwater
MET*2020	[0.50]	Agrometeorology

NRS*2120	[0.50]	Introduction to Environmental Stewardship
PBIO*4100	[0.50]	Soil Plant Relationships
SOIL*3080	[0.50]	Soil and Water Conservation
SOIL*4090	[0.50]	Soil Management
SOIL*4130	[0.50]	Soil and Nutrient Management
SOIL*4250	[0.50]	Soils in the Landscape

Climate & Agroecosystems Management:

GEOG*3020	[0.50]	Global Environmental Change
GEOL*2200	[0.50]	Glacial Geology
MET*2030	[0.50]	Meteorology and Climatology
MET*3050	[0.50]	Microclimatology
MET*4210	[0.50]	Atmospheric Experimentation and Instrumentation

Nutrient Management:

GEOL*2200	[0.50]	Glacial Geology
SOIL*3060	[0.50]	Environmental Soil Chemistry
SOIL*3070	[0.50]	Environmental Soil Physics
SOIL*3200	[0.50]	Environmental Soil Biology
SOIL*4130	[0.50]	Soil and Nutrient Management

Source Water Protection:

BIOL*3450	[0.50]	Introduction to Aquatic Environments
BIOL*4350	[0.50]	Biology of Polluted Waters
GEOG*3610	[0.50]	Environmental Hydrology
GEOL*2200	[0.50]	Glacial Geology
GEOL*3190	[0.50]	Environmental Water Chemistry
ENVB*3280	[0.50]	Waterborne Disease Ecology
ENVB*4020	[0.50]	Water Quality and Environmental Management

Agroforestry

BOT*3050	[0.50]	Plant Functional Ecology
ENVB*2030	[0.50]	Current Issues in Forest Science
ENVB*2040	[0.50]	Plant Health and the Environment
ENVB*2100	[0.50]	Problem-Solving in Environmental Biology
ENVB*3230	[0.50]	Agroforestry Systems **
ENVB*3250	[0.50]	Forest Health and Disease **
ENVB*3270	[0.50]	Forest Biodiversity **
ENVB*3330	[0.50]	Ecosystem Processes and Applications **
ENVB*4780	[0.50]	Forest Ecology **
HORT*3230	[0.50]	Plant Propagation
NRS*2120	[0.50]	Introduction to Environmental Stewardship
PBIO*4100	[0.50]	Soil Plant Relationships
SOIL*4090	[0.50]	Soil Management
SOIL*4130	[0.50]	Soil and Nutrient Management

Communication, Organizations and Development

General Recommendations:

EDRD*2020	[0.50]	Interpersonal Communication
EDRD*3000	[0.50]	Program Development and Evaluation
EDRD*3120	[0.50]	Educational Communication
EDRD*3140	[0.50]	Organizational Communication
EDRD*4120	[0.50]	Leadership Development in Small Organizations

Communication: Process and Products:

EDRD*3050	[0.50]	Agricultural Communication I
EDRD*3160	[0.50]	International Communication
EDRD*4020	[0.50]	Rural Extension in Change and Development
EDRD*4060	[0.50]	Agricultural Communication II

Rural Organizations and Community Development:

ANTH*2660	[0.50]	Contemporary Native Peoples of Canada **
LARC*2820	[0.50]	Urban and Regional Planning
MCS*1000	[0.50]	Introductory Marketing
MCS*2600	[0.50]	Fundamentals of Consumer Behaviour **
SOC*2080	[0.50]	Rural Sociology **
SOC*2280	[0.50]	Society and Environment **

International Agriculture

General Recommendations:

AGR*2500	[0.50]	Field Course in International Agriculture
CROP*2110	[0.50]	Crop Ecology
EDRD*3160	[0.50]	International Communication
EDRD*4020	[0.50]	Rural Extension in Change and Development
FARE*1300	[0.50]	Poverty, Food & Hunger
FARE*4210	[0.50]	World Agriculture and Economic Development
HORT*4380	[0.50]	Tropical and Sub-Tropical Crops

Tropical Agroecosystems:

PBIO*4100	[0.50]	Soil Plant Relationships
SOIL*3080	[0.50]	Soil and Water Conservation
SOIL*4090	[0.50]	Soil Management
SOIL*4130	[0.50]	Soil and Nutrient Management

International Agribusiness and Policy:

ECON*2410	[0.50]	Intermediate Macroeconomics
FARE*2410	[0.50]	Agrifood Markets and Policy
FARE*4000	[0.50]	Agricultural and Food Policy **

Plant Protection

CROP*4240	[0.50]	Weed Science
ENVB*2040	[0.50]	Plant Health and the Environment
ENVB*3030	[0.50]	Pesticides and the Environment
ENVB*3040	[0.50]	Natural Chemicals in the Environment
ENVB*3090	[0.50]	Insect Diversity and Biology
ENVB*3210	[0.50]	Plant Pathology
ENVB*3250	[0.50]	Forest Health and Disease **
ENVB*4070	[0.50]	Biological and Cultural Control of Plant Diseases
ENVB*4100	[0.50]	Integrated Management of Invasive Insect Pests **
ENVB*4130	[0.50]	Chemical Ecology: Principles & Practice **
ENVB*4240	[0.50]	Biological Activity of Pesticides
MICR*3220	[0.50]	Plant Microbiology **
PBIO*4000	[0.50]	Molecular and Cellular Aspects of Plant-Microbe Interactions **

Agriculture (AGR)

OAC Dean's Office

Minor (Honours Program)

The requirement of 5.00 credits for the minor is divided into 2 groups of courses, required courses and restricted electives. Students should ensure that they obtain the necessary prerequisites for required and restricted elective courses. Students should seek academic counselling from the B.Sc.(Agr) Program Counsellor early in their program. This minor is not open to students in the B.Sc.(Agr) Program.

Minor

A minimum of 5.00 credits is required including:

AGR*1250	[0.50]	Agrifood System Trends & Issues

Three of:

AGR*2320	[0.50]	Soils in Agroecosystems
AGR*2350	[0.50]	Animal Production Systems, Health and Industry
AGR*2400	[0.50]	Economics of the Canadian Food System
AGR*2470	[0.50]	Introduction to Plant Agriculture
AGR*2500	[0.50]	Field Course in International Agriculture
EDRD*3400	[0.50]	Sustainable Communities
FOOD*3090	[0.50]	Food Science and Human Nutrition

3.00 credits from the following Elective List:

Note: At least 0.50 credits must be at the 4000 level and 1.00 credits at the 3000 level or higher.

Agronomy:

CROP*3300	[0.50]	Grain Crops
CROP*3310	[0.50]	Protein and Oilseed Crops
CROP*3340	[0.50]	Managed Grasslands
CROP*4220	[0.50]	Cropping Systems
CROP*4240	[0.50]	Weed Science
HORT*4380	[0.50]	Tropical and Sub-Tropical Crops
PBIO*3110	[0.50]	Crop Physiology

Animal Science:

ANSC*2330	[0.50]	Horse Management Science
ANSC*2340	[0.50]	Structure of Farm Animals
ANSC*3080	[0.50]	Agricultural Animal Physiology
ANSC*3210	[0.50]	Principles of Animal Care and Welfare
ANSC*4050	[0.50]	Biotechnology in Animal Science
MBG*3090	[0.50]	Applied Animal Genetics
MBG*2040	[0.50]	Foundations in Molecular Biology and Genetics

Environmental Biology:

ENVB*2040	[0.50]	Plant Health and the Environment
ENVB*3030	[0.50]	Pesticides and the Environment
ENVB*3040	[0.50]	Natural Chemicals in the Environment
ENVB*3210	[0.50]	Plant Pathology
ENVB*4100	[0.50]	Integrated Management of Invasive Insect Pests
ENVB*4240	[0.50]	Biological Activity of Pesticides

Horticultural Science:

HORT*3230	[0.50]	Plant Propagation
HORT*3280	[0.50]	Greenhouse Production
HORT*3340	[0.50]	Culture of Plants
HORT*4300	[0.50]	Postharvest Physiology
PBIO*3110	[0.50]	Crop Physiology
PBIO*3750	[0.50]	Plant Tissue Culture

Organic Agriculture:

CROP*2110	[0.50]	Crop Ecology
OAGR*2300	[0.50]	Organic Marketing
OAGR*2050	[0.50]	Gateway to Organic Agriculture
OAGR*3030	[0.50]	Tutorials in Organic Agriculture 1
OAGR*3130	[0.50]	Tutorials in Organic Agriculture II

OAGR*4160	[0.50]	Design of Organic Production Systems

Resource Management:

NRS*2120	[0.50]	Introduction to Environmental Stewardship
NRS*3000	[0.50]	Environmental Issues in Agriculture and Landscape Management
MET*2020	[0.50]	Agrometeorology
MET*2030	[0.50]	Meteorology and Climatology
MET*3050	[0.50]	Microclimatology
SOIL*3050	[0.50]	Land Utilization
SOIL*3080	[0.50]	Soil and Water Conservation
SOIL*4090	[0.50]	Soil Management
SOIL*4130	[0.50]	Soil and Nutrient Management
PBIO*4100	[0.50]	Soil Plant Relationships

Animal Science (ANSC)

Department of Animal and Poultry Science

Semester 1

AGR*1100	[0.50]	Introduction to the Agrifood Systems
BIOL*1070	[0.50]	Discovering Biodiversity
CHEM*1040	[0.50]	General Chemistry I
ECON*1050	[0.50]	Introductory Microeconomics
MATH*1080	[0.50]	Elements of Calculus I

Semester 2

AGR*1250	[0.50]	Agrifood System Trends & Issues
BIOL*1080	[0.50]	Biological Concepts of Health
BIOL*1090	[0.50]	Introduction to Molecular and Cellular Biology
CHEM*1050	[0.50]	General Chemistry II

0.50 electives

Semester 3

AGR*2320	[0.50]	Soils in Agroecosystems
AGR*2350	[0.50]	Animal Production Systems, Health and Industry
AGR*2400	[0.50]	Economics of the Canadian Food System
AGR*2470	[0.50]	Introduction to Plant Agriculture
MBG*2040	[0.50]	Foundations in Molecular Biology and Genetics

Semester 4

ANSC*2340	[0.50]	Structure of Farm Animals
BIOC*2580	[0.50]	Introduction to Biochemistry
MICR*2420	[0.50]	Introduction to Microbiology
STAT*2040	[0.50]	Statistics I

0.50 electives

Semester 5

ANSC*3080	[0.50]	Agricultural Animal Physiology
ANSC*3120	[0.50]	Introduction to Animal Nutrition
NUTR*3210	[0.50]	Fundamentals of Nutrition
MBG*3090	[0.50]	Applied Animal Genetics

One of:

POPM*4230	[0.50]	Animal Health (even-numbered years)*

OR

0.50 electives (odd-numbered years)*

*** Note:** POPM*4230 needs to be taken in either Semester 5 or 7 as course is offered in even-numbered years only.

Semester 6

2.50 electives or restricted electives

Semester 7 & 8

Students must choose either Option A or B in Semester 7 and 8

Option A:

Semester 7

POPM*4230	[0.50]	Animal Health

One of:

2.00 electives or restricted electives (odd-numbered years)

OR

2.50 electives or restricted electives (even-numbered years)

*** Note:** POPM*4230 needs to be taken in either Semester 5 or 7 as course is offered in even-numbered years only.

Semester 8

AGR*4500	[0.50]	Agrifood Industry Problem-Solving

2.00 electives or restricted electives

Option B

Semester 7

AGR*4450	[1.00]	Research Project I
POPM*4230	[0.50]	Animal Health

1.00 electives or restricted electives

*** Note:** POPM*4230 needs to be taken in either Semester 5 or 7 as course is offered in even-numbered years only.

Semester 8

AGR*4460	[1.00]	Research Project II

1.50 electives or restricted electives

Restricted Electives

1. A minimum of 3.00 credits. 1.00 credits required from each of Animal Breeding, Animal Nutrition and Animal Physiology and Behaviour:

   Note: Some courses listed below may have prerequisites not included among the mandatory courses for the ANSC major listed above. Students are advised to pay particular attention to prerequisite requirements when choosing individual courses, and seek advice as needed.

   Animal Breeding.

ANSC*4020	[0.50]	Genetics of Companion Animals
ANSC*4050	[0.50]	Biotechnology in Animal Science
MBG*3060	[0.50]	Quantitative Genetics
MBG*4030	[0.50]	Animal Breeding Methods

   Animal Nutrition:

ANSC*3170	[0.50]	Nutrition of Fish and Crustacea
ANSC*3180	[0.50]	Wildlife Nutrition
ANSC*4260	[0.50]	Beef Cattle Nutrition
ANSC*4270	[0.50]	Dairy Cattle Nutrition
ANSC*4280	[0.50]	Poultry Nutrition
ANSC*4290	[0.50]	Swine Nutrition
ANSC*4470	[0.50]	Animal Metabolism
ANSC*4560	[0.50]	Pet Nutrition
EQN*4020	[0.50]	Feeding the Performance Horse

   Animal Physiology and Behaviour:

ANSC*3210	[0.50]	Principles of Animal Care and Welfare
ANSC*4090	[0.50]	Applied Animal Behaviour
ANSC*4100	[0.50]	Applied Environmental Physiology and Animal Housing
ANSC*4490	[0.50]	Applied Endocrinology
EQN*3050	[0.50]	Equine Exercise Physiology

2. A minimum of 7.00 credits must be at the 3000 level or higher, of which 5.00 credits must be in agricultural science and of which 3.50 credits must be at the 4000 level. Refer to Program Counsellor for list of agricultural science courses.
3. A humanities or social science course (0.50 credits) at the 2000 level or above from the College of Arts or College of Social and Applied Human Sciences.

Crop, Horticulture and Turfgrass Sciences (CHAT)

Department of Plant Agriculture

Semester 1

AGR*1100	[0.50]	Introduction to the Agrifood Systems
BIOL*1070	[0.50]	Discovering Biodiversity
CHEM*1040	[0.50]	General Chemistry I
ECON*1050	[0.50]	Introductory Microeconomics
MATH*1080	[0.50]	Elements of Calculus I

Semester 2

AGR*1250	[0.50]	Agrifood System Trends & Issues
BIOL*1080	[0.50]	Biological Concepts of Health
BIOL*1090	[0.50]	Introduction to Molecular and Cellular Biology
CHEM*1050	[0.50]	General Chemistry II

0.50 electives

Semester 3

AGR*2320	[0.50]	Soils in Agroecosystems
AGR*2400	[0.50]	Economics of the Canadian Food System
AGR*2470	[0.50]	Introduction to Plant Agriculture
MBG*2040	[0.50]	Foundations in Molecular Biology and Genetics

0.50 electives or restricted electives

Note: Students with an interest in business courses should select ACCT*2220 as an elective.

Semester 4

BIOC*2580	[0.50]	Introduction to Biochemistry
BOT*2100	[0.50]	Life Strategies of Plants
STAT*2040	[0.50]	Statistics I

One of:

BOT*3050	[0.50]	Plant Functional Ecology (in semester 5)
CROP*2110	[0.50]	Crop Ecology

0.50 to 1.00 electives or restricted electives

Note: Students with an interest in business courses should select ACCT*2230 as an elective.

Semester 5

BOT*3050	[0.50]	Plant Functional Ecology (if CROP*2110 is not taken in semester 4)
FOOD*3090	[0.50]	Food Science and Human Nutrition

One of:

BOT*3310	[0.50]	Plant Growth and Development (in semester 6)
PBIO*3110	[0.50]	Crop Physiology

1.00 to 2.00 electives or restricted electives

Semester 6

BOT*3310	[0.50]	Plant Growth and Development (if PBIO*3110 is not taken in semester 5)
EDRD*3400	[0.50]	Sustainable Communities

1.50 to 2.00 electives or restricted electives

Semester 7 & 8

Students must choose either Option A or B in Semester 7 and 8

Option A:

Semester 7

One of:

PBIO*4100	[0.50]	Soil Plant Relationships (in semester 8)
SOIL*4090	[0.50]	Soil Management
SOIL*4130	[0.50]	Soil and Nutrient Management

2.00 to 2.50 electives or restricted electives

Semester 8

AGR*4500	[0.50]	Agrifood Industry Problem-Solving
PBIO*4100	[0.50]	Soil Plant Relationships (if 1 of SOIL*4090 or SOIL*4130 is not taken in semester 7)

1.50 to 2.00 electives or restricted electives

Option B

Semester 7

AGR*4450	[1.00]	Research Project I

One of:

PBIO*4100	[0.50]	Soil Plant Relationships (in semester 8)
SOIL*4090	[0.50]	Soil Management
SOIL*4130	[0.50]	Soil and Nutrient Management

1.00 to 1.50 electives or restricted electives

Semester 8

AGR*4460	[1.00]	Research Project II
PBIO*4100	[0.50]	Soil Plant Relationships (if 1 of SOIL*4090 or SOIL*4130 is not taken in semester 7)

1.00 to 1.50 electives or restricted electives

Restricted Electives

1. A minimum of 7.00 credits must be at the 3000 level or higher, of which 5.00 credits must be in agricultural science and of which 3.50 credits must be at the 4000 level. Those credits at the 3000 level or above selected to satisfy Item # 3 below will be applied to satisfy this minimum 7.00 credit requirement. Refer to the Program Counsellor for the list of agricultural science courses.
2. A humanities or social science course (0.50 credits) at the 2000 level or above from the College of Arts or College of Social and Applied Human Sciences.
3. Six courses (3.00 credits) from the courses listed below without regard to group.

Students who wish to concentrate in particular areas of plant agriculture should consider selecting courses from one of the following three course groups.

Note: Some courses listed below may have prerequisites not included among the mandatory courses for the CHATS major listed above. Students are advised to pay particular attention to prerequisite requirements when choosing individual courses, and seek advice as needed.

1. Crop Science

Choose three courses (1.50 credits) among the following:

CROP*3300	[0.50]	Grain Crops
CROP*3310	[0.50]	Protein and Oilseed Crops
CROP*3340	[0.50]	Managed Grasslands
CROP*4220	[0.50]	Cropping Systems
CROP*4240	[0.50]	Weed Science
HORT*4380	[0.50]	Tropical and Sub-Tropical Crops
OAGR*2050	[0.50]	Gateway to Organic Agriculture

Choose three courses (1.50 credits) among the following:

AGR*2350	[0.50]	Animal Production Systems, Health and Industry
ENVB*3210	[0.50]	Plant Pathology
ENVB*4100	[0.50]	Integrated Management of Invasive Insect Pests
MBG*3100	[0.50]	Plant Genetics
MBG*4160	[0.50]	Plant Breeding
MET*2020	[0.50]	Agrometeorology
NRS*3000	[0.50]	Environmental Issues in Agriculture and Landscape Management
OAGR*4160	[0.50]	Design of Organic Production Systems
PBIO*3750	[0.50]	Plant Tissue Culture
PBIO*4100	[0.50]	Soil Plant Relationships
PBIO*4750	[0.50]	Genetic Engineering of Plants
SOIL*3080	[0.50]	Soil and Water Conservation

2. Horticultural Science

Choose two courses (1.00 credits) among the following:

HORT*2450	[0.50]	Introduction to Turfgrass Science
HORT*3010	[0.50]	Annual, Perennial and Indoor Plants - Identification and Use
HORT*3280	[0.50]	Greenhouse Production
HORT*3350	[0.50]	Woody Plant Production and Culture
HORT*3510	[0.50]	Vegetable Production
HORT*4420	[0.50]	Fruit Crops

Choose two courses (1.00 credits) among the following:

BOT*3410	[0.50]	Plant Anatomy
HORT*3230	[0.50]	Plant Propagation
HORT*4300	[0.50]	Postharvest Physiology
MBG*3100	[0.50]	Plant Genetics
MBG*4160	[0.50]	Plant Breeding
PBIO*3750	[0.50]	Plant Tissue Culture
PBIO*4100	[0.50]	Soil Plant Relationships
PBIO*4750	[0.50]	Genetic Engineering of Plants

Choose two courses (1.00 credits) among the following:

CROP*4240	[0.50]	Weed Science
ENVB*3210	[0.50]	Plant Pathology
ENVB*4100	[0.50]	Integrated Management of Invasive Insect Pests

3. Turfgrass Science

CROP*4240	[0.50]	Weed Science
ENVB*3160	[0.50]	Management of Turfgrass Diseases
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

Choose one of:

AGR*3500	[0.50]	Experiential Education I
ENVB*3030	[0.50]	Pesticides and the Environment
HORT*4200	[0.50]	Turf, the Environment and Society

Business Electives

Students who wish to add business courses to their program are advised to select ACCT*2220 and ACCT*2230 plus two courses (1.00 credits) as electives from the following list:

BUS*2090	[0.50]	Individuals and Groups in Organizations
BUS*3000	[0.50]	Human Resources Management
FARE*3310	[0.50]	Operations Management
FARE*3400	[0.50]	Agribusiness Financial Management
FARE*4220	[0.50]	Advanced Agribusiness Management
FARE*4240	[0.50]	Futures and Options Markets
FARE*4370	[0.50]	Food & Agri Marketing Management

Organic Agriculture (OAGR)

Department of Plant Agriculture and School of Environmental Sciences

Semester 1

AGR*1100	[0.50]	Introduction to the Agrifood Systems
BIOL*1070	[0.50]	Discovering Biodiversity
CHEM*1040	[0.50]	General Chemistry I
ECON*1050	[0.50]	Introductory Microeconomics
MATH*1080	[0.50]	Elements of Calculus I

Semester 2

AGR*1250	[0.50]	Agrifood System Trends & Issues
BIOL*1080	[0.50]	Biological Concepts of Health
BIOL*1090	[0.50]	Introduction to Molecular and Cellular Biology
CHEM*1050	[0.50]	General Chemistry II

0.50 electives

Semester 3

AGR*2320	[0.50]	Soils in Agroecosystems
AGR*2350	[0.50]	Animal Production Systems, Health and Industry
AGR*2400	[0.50]	Economics of the Canadian Food System
AGR*2470	[0.50]	Introduction to Plant Agriculture
OAGR*2050	[0.50]	Gateway to Organic Agriculture

Semester 4

STAT*2040	[0.50]	Statistics I

2.00 electives or restricted electives

Semester 5

AGR*3500	[0.50]	Experiential Education I
BOT*2100	[0.50]	Life Strategies of Plants
FOOD*3090	[0.50]	Food Science and Human Nutrition
OAGR*3030	[0.50]	Tutorials in Organic Agriculture 1

0.50 electives or restricted electives

Semester 6

EDRD*3400	[0.50]	Sustainable Communities
OAGR*3130	[0.50]	Tutorials in Organic Agriculture II
SOIL*3200	[0.50]	Environmental Soil Biology

1.00 electives or restricted electives

Semester 7

OAGR*2300	[0.50]	Organic Marketing
OAGR*4160	[0.50]	Design of Organic Production Systems

1.50 electives or restricted electives

Semester 8

AGR*4500	[0.50]	Agrifood Industry Problem-Solving
OAGR*4180	[0.50]	Social Issues in Organic Agriculture

1.50 electives or restricted electives

Restricted Electives

1. A minimum of 2.00 credits from the list of restricted electives below:

   Note: Some courses listed below may have prerequisites not included among the mandatory courses for the OAGR major listed above. Students are advised to pay particular attention to prerequisite requirements when choosing individual courses, and seek advice as needed.

ANSC*3210	[0.50]	Principles of Animal Care and Welfare
CROP*2110	[0.50]	Crop Ecology
CROP*4240	[0.50]	Weed Science
ENVB*2040	[0.50]	Plant Health and the Environment
ENVB*3210	[0.50]	Plant Pathology
ENVB*4100	[0.50]	Integrated Management of Invasive Insect Pests
GEOG*3320	[0.50]	Agriculture and Society
NRS*3000	[0.50]	Environmental Issues in Agriculture and Landscape Management
PBIO*4100	[0.50]	Soil Plant Relationships
PHIL*2070	[0.50]	Philosophy of the Environment
SOAN*4220	[0.50]	Gender and Change in Rural Canada
SOC*3380	[0.50]	Society and Nature
SOC*4210	[0.50]	Advanced Topics in Rural Sociology

2. A minimum of 7.00 credits must be at the 3000 level or higher, of which 5.00 credits must be in agricultural science and of which 3.50 credits must be at the 4000 level. Refer to Program Counsellor for list of agricultural science courses.
3. A humanities or social science course (0.50 credits) at the 2000 level or above from the College of Arts or College of Social and Applied Human Sciences.

Note: In this major there are fees charged to cover partial costs of some field trips. Students in need of financial assistance should approach the Chair of the department.