

AGRICULTURE, HONOURS (AGRS)

Departments of Plant Agriculture and Animal Biosciences, Ontario
Agricultural College

The Honours Agriculture major combines a core curriculum of agricultural science courses with a wide range of electives focusing on agri-food business, animal and plant production, land stewardship and sustainability. This major allows students to create a curriculum uniquely tailored to their career goals and provides diverse opportunities to explore international agriculture and leading edge agricultural research in animal production, plant biotechnology and pest management. The flexibility provided in semesters 5 and 6 permits students to participate in international exchanges and study abroad program. Students can also incorporate a variety of field trips, experiential learning in the workplace and independent study into their program of studies. The combination of a solid understanding of life science and current agricultural practice with specialized skills and experience provided by this program is greatly valued by prospective employers in this essential sector of Canada's economy.

The Co-op program in Honours Agriculture facilitates the transition of students from academic studies to a professional career by enhancing the integration of theory and practice.

Major Requirements (Honours)

This is a major within the degree: Bachelor of Science in Agriculture.

| Code | Title | Credits |
|--|--|---------|
| Semester 1 | | |
| AGR*1110 | Introduction to the Agri-Food Systems | 1.00 |
| BIOL*1050 | Biology of Plants & Animals in Managed Ecosystems | 0.50 |
| CHEM*1040 | General Chemistry I | 0.50 |
| MATH*1080 | Elements of Calculus I | 0.50 |
| Semester 2 | | |
| AGR*1350 | Animal Production Systems and Industry: Dairy, Poultry and Egg | 0.50 |
| BIOL*1090 | Introduction to Molecular and Cellular Biology | 0.50 |
| CHEM*1050 | General Chemistry II | 0.50 |
| FARE*1400 | Economics of the Agri-Food System | 1.00 |
| Semester 3 | | |
| AGR*2320 | Soils in Agroecosystems | 0.50 |
| AGR*2470 | Introduction to Plant Agriculture | 0.50 |
| FARE*2700 | Survey of Natural Resource Economics | 0.50 |
| MBG*2400 | Fundamentals of Plant and Animal Genetics | 0.50 |
| 0.50 electives or restricted electives | | 0.50 |
| Semester 4 | | |
| AGR*2050 | Agroecology | 0.50 |
| ANSC*2340 | Structure of Farm Animals | 0.50 |
| BIOC*2580 | Introduction to Biochemistry | 0.50 |
| ENVS*2040 | Plant Health and the Environment | 0.50 |
| STAT*2040 | Statistics I | 0.50 |

Semester 5 to 8

Select one of the following options: 10.00

Option A - Production and Management

Option B - Research

Option A - Production and Management

| Code | Title | Credits |
|--|---|---------|
| Semester 5 | | |
| FOOD*3090 | Food Science and Human Nutrition | 0.50 |
| 2.00 electives or restricted electives | | 2.00 |
| Semester 6 | | |
| 2.50 electives or restricted electives | | 2.50 |
| Semester 7 | | |
| 2.50 electives or restricted electives | | 2.50 |
| Semester 8 | | |
| AGR*4600 | Agriculture and Food Issues Problem Solving | 1.00 |
| 1.50 electives or restricted electives | | 1.50 |

Restricted Electives - Option A

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.

- A minimum of 1.00 credits from the list of restricted electives below:

| Code | Title | Credits |
|-----------|--|---------|
| AGR*2350 | Animal Production Systems and Industry: Beef, Swine and Others | 0.50 |
| AGR*2500 | Field Course in International Agriculture | 0.50 |
| AGR*3010 | Special Studies in Agricultural Science I | 0.50 |
| AGR*3450 | Research Methods in Agricultural Science | 0.50 |
| ANSC*4010 | Animal Welfare Judging and Evaluation | 0.50 |
| ANSC*4230 | Challenges and Opportunities in Dairy Cattle Production | 0.50 |
| ANSC*4610 | Critical Analysis in Animal Science | 0.50 |
| CROP*4260 | Crop Science Field Trip | 0.50 |
| EDRD*3140 | Organizational Communication | 0.50 |
| FARE*3310 | Operations Management | 0.50 |
| FARE*4220 | Advanced Agribusiness Management | 0.50 |
| FARE*4310 | Resource Economics | 0.50 |
| FARE*4360 | Marketing Research | 0.50 |
| FARE*4550 | Independent Studies I | 0.50 |
| IAEF*3500 | Experiential Education | 0.50 |
| IAEF*3510 | Interdisciplinary Flexible Internship | 0.50 |

- A minimum of 2.00 credits from the following lists:

| Code | Title | Credits |
|--|------------------------------|---------|
| Select a minimum of 0.50 credits from the following: | | |
| CROP*3300 | Grain Crops | 0.50 |
| CROP*3310 | Protein and Oilseed Crops | 0.50 |
| CROP*3340 | Managed Grasslands | 0.50 |
| ENVS*4090 | Soil Management | 0.50 |
| ENVS*4160 | Soil and Nutrient Management | 0.50 |

| | | |
|--|--|------|
| HORT*2450 | Introduction to Turfgrass Science | 0.50 |
| HORT*3150 | Principles and Applications of Plant Propagation | 0.50 |
| HORT*4380 | Tropical and Sub-Tropical Crops | 0.50 |
| PBIO*3110 | Crop Physiology | 0.50 |
| PBIO*3750 | Plant Tissue Culture | 0.50 |
| Select a minimum of 0.50 credits from the following: | | |
| CROP*4240 | Weed Science | 0.50 |
| ENVS*3020 | Pesticides and the Environment | 0.50 |
| ENVS*3210 | Plant Pathology | 0.50 |
| ENVS*3230 | Agroforestry Systems | 0.50 |
| Select a minimum of 0.50 credits from the following: | | |
| ACCT*1220 | Introductory Financial Accounting | 0.50 |
| ECON*1050 | Introductory Microeconomics | 0.50 |
| ECON*1100 | Introductory Macroeconomics | 0.50 |
| ECON*2310 | Intermediate Microeconomics | 0.50 |
| FARE*2410 | Agri-food Markets and Policy | 0.50 |
| FARE*3170 | Cost-Benefit Analysis | 0.50 |
| Students may also take any of the following courses as restricted electives: | | |
| BOT*2100 | Life Strategies of Plants | 0.50 |
| MBG*2040 | Foundations in Molecular Biology and Genetics | 0.50 |
| MBG*3060 | Quantitative Genetics | 0.50 |
| OAGR*2070 | Introduction to Organic Agriculture | 1.00 |

- 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.
- A humanities or social science courses (0.50 credits) at the 1000-level or above. See Program Counsellor for acceptable list of courses.

Option B - Research

| Code | Title | Credits |
|--|--|---------|
| Semester 5 | | |
| AGR*3450 | Research Methods in Agricultural Science | 0.50 |
| FOOD*3090 | Food Science and Human Nutrition | 0.50 |
| 1.50 electives or restricted electives | | 1.50 |
| Semester 6 | | |
| 2.50 electives or restricted electives | | 2.50 |
| Semester 7 | | |
| AGR*4450 | Research Project I | 0.50 |
| 2.00 electives or restricted electives | | 2.00 |
| Semester 8 | | |
| AGR*4460 | Research Project II | 1.00 |
| 1.50 electives or restricted electives | | 1.50 |

Restricted Electives - Option B

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.

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

| Code | Title | Credits |
|--|--|---------|
| Select a minimum of 0.50 credits from the following: | | |
| CROP*3300 | Grain Crops | 0.50 |
| CROP*3310 | Protein and Oilseed Crops | 0.50 |
| CROP*3340 | Managed Grasslands | 0.50 |
| ENVS*4090 | Soil Management | 0.50 |
| ENVS*4160 | Soil and Nutrient Management | 0.50 |
| HORT*2450 | Introduction to Turfgrass Science | 0.50 |
| HORT*3150 | Principles and Applications of Plant Propagation | 0.50 |
| HORT*4380 | Tropical and Sub-Tropical Crops | 0.50 |
| PBIO*3110 | Crop Physiology | 0.50 |
| PBIO*3750 | Plant Tissue Culture | 0.50 |
| Select a minimum of 0.50 credits from the following: | | |
| CROP*4240 | Weed Science | 0.50 |
| ENVS*3020 | Pesticides and the Environment | 0.50 |
| ENVS*3210 | Plant Pathology | 0.50 |
| ENVS*3230 | Agroforestry Systems | 0.50 |
| Select a minimum of 0.50 credits from the following: | | |
| ACCT*1220 | Introductory Financial Accounting | 0.50 |
| ECON*1050 | Introductory Microeconomics | 0.50 |
| ECON*1100 | Introductory Macroeconomics | 0.50 |
| ECON*2310 | Intermediate Microeconomics | 0.50 |
| FARE*2410 | Agri-food Markets and Policy | 0.50 |
| FARE*3170 | Cost-Benefit Analysis | 0.50 |
| Students may also take any of the following courses as restricted electives: | | |
| BOT*2100 | Life Strategies of Plants | 0.50 |
| MBG*2040 | Foundations in Molecular Biology and Genetics | 0.50 |
| MBG*3060 | Quantitative Genetics | 0.50 |
| OAGR*2070 | Introduction to Organic Agriculture | 1.00 |

- 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.
- A humanities or social science courses (0.50 credits) at the 1000-level or above. See Program Counsellor for acceptable list of courses.

Co-op Requirements (Honours)

This is a major within the degree: Bachelor of Science in Agriculture.

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 | Off |
| 4 | Academic Semester 7 | COOP*2000 Work Term II | COOP*3000 Work Term III |

| | | |
|---|---|-----|
| 5 | COOP*4000 Work Academic Term IV Semester 8 | N/A |
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Please refer to the Co-operative Education program policy with respect to work term performance grading, work term report grading and program completion requirements.

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

Credit Summary

- In semester 5, students must choose Option A: Production and Management, or Option B: Research.
 - Option A: 10.50 credits from required courses, 3.00 credits of restricted electives, 0.50 of humanities and social sciences, and 6.00 credits of free electives.
 - Option B: 11.50 credits from required courses, 2.00 credits of restricted electives, 0.50 of humanities and social sciences and 6.00 credits of free electives.
- 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 a list of agricultural science courses.
- A humanities or social sciences (0.50 credits) at the 1000-level or above. See Program Counsellor for acceptable list of courses.
- Co-op Work Terms: 2.00 credits
- Total Credits Required to Graduate: 22.00**

Recommended Program Sequence

| Code | Title | Credits |
|--|--|---------|
| Semester 1 - Fall | | |
| AGR*1110 | Introduction to the Agri-Food Systems | 1.00 |
| BIOL*1050 | Biology of Plants & Animals in Managed Ecosystems | 0.50 |
| CHEM*1040 | General Chemistry I | 0.50 |
| MATH*1080 | Elements of Calculus I | 0.50 |
| Semester 2 - Winter | | |
| AGR*1350 | Animal Production Systems and Industry: Dairy, Poultry and Egg | 0.50 |
| BIOL*1090 | Introduction to Molecular and Cellular Biology | 0.50 |
| CHEM*1050 | General Chemistry II | 0.50 |
| FARE*1400 | Economics of the Agri-Food System | 1.00 |
| Summer Semester | | |
| No academic semester or work term | | |
| Semester 3 - Fall | | |
| AGR*2320 | Soils in Agroecosystems | 0.50 |
| AGR*2470 | Introduction to Plant Agriculture | 0.50 |
| COOP*1100 | Introduction to Co-operative Education | 0.00 |
| FARE*2700 | Survey of Natural Resource Economics | 0.50 |
| MBG*2400 | Fundamentals of Plant and Animal Genetics | 0.50 |
| 0.50 electives or restricted electives | | 0.50 |
| Semester 4 - Winter | | |
| AGR*2050 | Agroecology | 0.50 |
| ANSC*2340 | Structure of Farm Animals | 0.50 |

| | | |
|------------------------|----------------------------------|------|
| BIOC*2580 | Introduction to Biochemistry | 0.50 |
| ENVS*2040 | Plant Health and the Environment | 0.50 |
| STAT*2040 | Statistics I | 0.50 |
| Summer Semester | | |
| COOP*1000 | Co-op Work Term I | 0.50 |

Option A - Production and Management

| Code | Title | Credits |
|--|---|---------|
| Semester 5 - Fall | | |
| FOOD*3090 | Food Science and Human Nutrition | 0.50 |
| 2.00 electives or restricted electives | | 2.00 |
| Semester 6 - Winter | | |
| 2.50 electives or restricted electives | | 2.50 |
| Summer Semester | | |
| No academic semester or work term | | |
| Semester 7 - Fall | | |
| 2.50 electives or restricted electives | | 2.50 |
| Winter Semester | | |
| COOP*2000 | Co-op Work Term II | 0.50 |
| Summer Semester | | |
| COOP*3000 | Co-op Work Term III | 0.50 |
| Fall Semester | | |
| COOP*4000 | Co-op Work Term IV | 0.50 |
| Semester 8 - Winter | | |
| AGR*4600 | Agriculture and Food Issues Problem Solving | 1.00 |
| 1.50 electives or restricted electives | | 1.50 |

Restricted Electives - Option A

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.

- A minimum of 1.00 credits from the list of restricted electives below:

| Code | Title | Credits |
|-----------|--|---------|
| AGR*2350 | Animal Production Systems and Industry: Beef, Swine and Others | 0.50 |
| AGR*2500 | Field Course in International Agriculture | 0.50 |
| AGR*3010 | Special Studies in Agricultural Science I | 0.50 |
| AGR*3450 | Research Methods in Agricultural Science | 0.50 |
| ANSC*4010 | Animal Welfare Judging and Evaluation | 0.50 |
| ANSC*4230 | Challenges and Opportunities in Dairy Cattle Production | 0.50 |
| ANSC*4610 | Critical Analysis in Animal Science | 0.50 |
| CROP*4260 | Crop Science Field Trip | 0.50 |
| EDRD*3140 | Organizational Communication | 0.50 |
| FARE*3310 | Operations Management | 0.50 |
| FARE*4220 | Advanced Agribusiness Management | 0.50 |
| FARE*4310 | Resource Economics | 0.50 |
| FARE*4360 | Marketing Research | 0.50 |
| FARE*4550 | Independent Studies I | 0.50 |

- A minimum of 2.00 credits from the following lists:

| Code | Title | Credits |
|--|--|---------|
| Select a minimum of 0.50 credits from the following: | | |
| CROP*3300 | Grain Crops | 0.50 |
| CROP*3310 | Protein and Oilseed Crops | 0.50 |
| CROP*3340 | Managed Grasslands | 0.50 |
| ENVS*4090 | Soil Management | 0.50 |
| ENVS*4160 | Soil and Nutrient Management | 0.50 |
| HORT*2450 | Introduction to Turfgrass Science | 0.50 |
| HORT*3150 | Principles and Applications of Plant Propagation | 0.50 |
| HORT*4380 | Tropical and Sub-Tropical Crops | 0.50 |
| PBIO*3110 | Crop Physiology | 0.50 |
| PBIO*3750 | Plant Tissue Culture | 0.50 |
| Select a minimum of 0.50 credits from the following: | | |
| CROP*4240 | Weed Science | 0.50 |
| ENVS*3020 | Pesticides and the Environment | 0.50 |
| ENVS*3210 | Plant Pathology | 0.50 |
| ENVS*3230 | Agroforestry Systems | 0.50 |
| Select a minimum of 0.50 credits from the following: | | |
| ACCT*1220 | Introductory Financial Accounting | 0.50 |
| ECON*1050 | Introductory Microeconomics | 0.50 |
| ECON*1100 | Introductory Macroeconomics | 0.50 |
| ECON*2310 | Intermediate Microeconomics | 0.50 |
| FARE*2410 | Agri-food Markets and Policy | 0.50 |
| FARE*3170 | Cost-Benefit Analysis | 0.50 |
| Students may also take any of the following courses as restricted electives: | | |
| BOT*2100 | Life Strategies of Plants | 0.50 |
| MBG*2040 | Foundations in Molecular Biology and Genetics | 0.50 |
| MBG*3060 | Quantitative Genetics | 0.50 |
| OAGR*2070 | Introduction to Organic Agriculture | 1.00 |

Option B - Research

| Code | Title | Credits |
|--|--|---------|
| Semester 5 - Fall | | |
| AGR*3450 | Research Methods in Agricultural Science | 0.50 |
| FOOD*3090 | Food Science and Human Nutrition | 0.50 |
| 1.50 electives or restricted electives | | 1.50 |
| Semester 6 - Winter | | |
| AGR*4450 | Research Project I | 0.50 |
| 2.00 electives or restricted electives | | 2.00 |
| Summer Semester | | |
| No academic semester or work term | | |
| Semester 7 - Fall | | |
| AGR*4460 | Research Project II | 1.00 |
| 1.50 electives or restricted electives | | 1.50 |
| Winter Semester | | |
| COOP*2000 | Co-op Work Term II | 0.50 |
| Summer Semester | | |
| COOP*3000 | Co-op Work Term III | 0.50 |
| Fall Semester | | |
| COOP*4000 | Co-op Work Term IV | 0.50 |

Semester 8 - Winter

| | |
|--|------|
| 2.50 electives or restricted electives | 2.50 |
|--|------|

Restricted Electives - Option B

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.

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

| Code | Title | Credits |
|--|--|---------|
| Select a minimum of 0.50 credits from the following: | | |
| CROP*3300 | Grain Crops | 0.50 |
| CROP*3310 | Protein and Oilseed Crops | 0.50 |
| CROP*3340 | Managed Grasslands | 0.50 |
| ENVS*4090 | Soil Management | 0.50 |
| ENVS*4160 | Soil and Nutrient Management | 0.50 |
| HORT*2450 | Introduction to Turfgrass Science | 0.50 |
| HORT*3150 | Principles and Applications of Plant Propagation | 0.50 |
| HORT*4380 | Tropical and Sub-Tropical Crops | 0.50 |
| PBIO*3110 | Crop Physiology | 0.50 |
| PBIO*3750 | Plant Tissue Culture | 0.50 |
| Select a minimum of 0.50 credits from the following: | | |
| CROP*4240 | Weed Science | 0.50 |
| ENVS*3020 | Pesticides and the Environment | 0.50 |
| ENVS*3210 | Plant Pathology | 0.50 |
| ENVS*3230 | Agroforestry Systems | 0.50 |
| Select a minimum of 0.50 credits from the following: | | |
| ACCT*1220 | Introductory Financial Accounting | 0.50 |
| ECON*1050 | Introductory Microeconomics | 0.50 |
| ECON*1100 | Introductory Macroeconomics | 0.50 |
| ECON*2310 | Intermediate Microeconomics | 0.50 |
| FARE*2410 | Agri-food Markets and Policy | 0.50 |
| FARE*3170 | Cost-Benefit Analysis | 0.50 |
| Students may also take any of the following courses as restricted electives: | | |
| BOT*2100 | Life Strategies of Plants | 0.50 |
| MBG*2040 | Foundations in Molecular Biology and Genetics | 0.50 |
| MBG*3060 | Quantitative Genetics | 0.50 |
| OAGR*2070 | Introduction to Organic Agriculture | 1.00 |