AGRONOMY, B.SC. - AGRICULTURE

Overview/Entrance Requirements

The B.Sc. (Agriculture) is a professional program which prepares graduates for careers in the public and private sectors related to the production and distribution of agricultural commodities. Graduates are prepared to enter directly into a related graduate studies program.

The Agronomy program will provide an integrated and comprehensive study of the factors and processes associated with the science of crop production and the management and use of land and water resources. The program emphasizes land management and the sustainability of agronomic and horticultural crop systems. All students are required to take the following B.Sc. (Agriculture) degree core requirements and the respective program core courses.

Degree Requirements

Course	Title	Hours
B.Sc. Agriculture Degree Core		
ABIZ 1000	Introduction to Agribusiness Management	3
ABIZ 2510	Introduction to Agricultural and Food Marketing	3
AGEC 2370/ BIOL 2300	Principles of Ecology	3
AGRI 1600	Introduction to Agrifood Systems	3
AGRI 2030	Technical Communications	3
AGRI 2400	Experimental Methods in Agricultural and Food Sciences	3
AGRI 4100	Current Issues in Agricultural Systems	3
ANSC 2500	Animal Production	3
BIOL 1020	Biology 1: Principles and Themes	3
BIOL 1030	Biology 2: Biological Diversity, Function and Interactions	3
CHEM 1100	Introductory Chemistry 1: Atomic and Molecular Structure and Energetics	3
CHEM 1130	Introduction to Organic Chemistry [1]	3
or CHEM 1110	Introductory Chemistry 2: Interaction, Reactivity, and Chemical Properties	
ECON 1010	Introduction to Microeconomic Principles	3
HNSC 1200	Food: Facts and Fallacies	3
or HNSC 1210	Nutrition for Health and Changing Lifestyles	
One of the following: [2]		3
MATH 1210	Techniques of Classical and Linear Algebra	
MATH 1300	Vector Geometry and Linear Algebra	
MATH 1500	Introduction to Calculus	
MATH 1510	Applied Calculus 1	
MATH 1524	Mathematics for Management and Social Sciences	
PLNT 2500	Crop Production	3
PLNT 2520	Genetics	3
or BIOL 2500	Genetics 1	
SOIL 3600	Soils and Landscapes in Our Environment	3
Agronomy Core		
BIOL 2242	The Flowering Plants	3
BIOE 3100	Agricultural Engineering Fundamentals for Agronomists	3
ENTM 3170	Crop Protection Entomology	3
PLNT 3540	Weed Science	3
PLNT 4270	Plant Disease Control	3
PLNT 4510	Advanced Cropping Systems	3
PLNT 4590	Physiology of Crop Plants	3
SOIL 4510	Soil and Water Management	3
SOIL 4520	Soil Fertility	3
Restricted Electives		
6 credit hours from Group 1 - Agriculture		6
3 credit hours from Group 2 - Soil Science [3]		3
Free Electives		
30 credits hours [4]		30
Total Hours		**120**

1. Students can hold CHEM 2100 (Organic Chemistry 1: Foundations of Organic Chemistry) in place of CHEM 1130 (Introduction to Organic Chemistry).
2. Students are recommended to take one the MATH courses listed in the program requirements above however may also use either MATH 1220 or MATH 1230 to meet the requirement. Students may use the former MATH 1520 to meet the MATH course requirement.
3. Courses required as part of the Agriculture Degree Core or Agronomy Core cannot be used to meet this requirement.
4. Students can apply for the Cooperative Education Program. Three work terms are required to graduate with Co-op designation. Co-op courses (3 credit hours each) are used towards free electives.
5. Students considering graduate school in agriculture or a related field in the natural sciences are recommended to take CHEM 1120 (Introduction to Chemical Techniques) and CHEM 2730 (Elements of Biochemistry 1) as free electives.

Restricted Electives

Group 1 - Agriculture

Course	Title	Hours
AGRI 2300	Indigenous Issues in Food Systems	3
AGRI 3100	Introduction to Digital Agriculture	3
AGRI 3500	Geographical Information Systems (GIS) Applications in Agriculture	3
PLNT 1000	Urban Agriculture	3
PLNT 2510	Fundamentals of Horticulture	3
PLNT 3520	Principles of Plant Improvement	3
PLNT 3560	Organic Crop Production on the Prairies	3
PLNT 4410	Grassland Agriculture: Plant, Animal and Environment	3

Group 2 – Soil Science

Course	Title	Hours
SOIL 3XXX	Any 3000 level SOIL course	3
SOIL 4XXX	Any 4000 level SOIL course	3

Progression Plan

Suggested Agronomy Program Progression

Course	Title	Hours
Year 1		
ABIZ 1000	Introduction to Agribusiness Management	3
AGRI 1600	Introduction to Agrifood Systems	3
BIOL 1020	Biology 1: Principles and Themes	3
BIOL 1030	Biology 2: Biological Diversity, Function and Interactions	3
CHEM 1100	Introductory Chemistry 1: Atomic and Molecular Structure and Energetics	3
CHEM 1110 or CHEM 1130	Introductory Chemistry 2: Interaction, Reactivity, and Chemical Properties or Introduction to Organic Chemistry	3
ECON 1010	Introduction to Microeconomic Principles	3
HNSC 1200 or HNSC 1210	Food: Facts and Fallacies or Nutrition for Health and Changing Lifestyles	3
One of the following:		3
MATH 1210	Techniques of Classical and Linear Algebra	
MATH 1300	Vector Geometry and Linear Algebra	
MATH 1500	Introduction to Calculus	
MATH 1510	Applied Calculus 1	
MATH 1524	Mathematics for Management and Social Sciences	
Free Elective		3
	Hours	**30**
Year 2		
ABIZ 2510	Introduction to Agricultural and Food Marketing	3
AGEC 2370/ BIOL 2300	Principles of Ecology	3
AGRI 2030	Technical Communications	3
AGRI 2400	Experimental Methods in Agricultural and Food Sciences	3
BIOL 2242	The Flowering Plants	3
PLNT 2500	Crop Production	3
PLNT 2520/ BIOL 2500	Genetics	3
SOIL 3600	Soils and Landscapes in Our Environment	3
Restricted/Free Electives/Co-op		6
	Hours	**30**
Year 3		
ANSC 2500	Animal Production	3
BIOE 3100	Agricultural Engineering Fundamentals for Agronomists	3
ENTM 3170	Crop Protection Entomology	3
PLNT 3540	Weed Science	3
PLNT 4270	Plant Disease Control	3
PLNT 4590	Physiology of Crop Plants	3
Restricted/Free Electives/Co-op		12
	Hours	**30**
Year 4		
AGRI 4100	Current Issues in Agricultural Systems	3
PLNT 4510	Advanced Cropping Systems	3
SOIL 4510	Soil and Water Management	3
SOIL 4520	Soil Fertility	3
Restricted/Free Electives/Co-op		18
	Hours	**30**
	Total Hours	**120**

Cooperative Education Program

Co-operative Education is a process that alternates periods of academic study with periods of paid work experience relating to the co-op student's area of study. The Co-operative Education Program provide students with practical experience, coaching, workshops and support as well as the opportunity for career exploration, development and exposure to more than a single type of work environment in their discipline.

Students secure full-time, paid co-op work placements with a FAFS-Co-op Office approved employer(s) that are each a minimum of 420 hours, to be completed within 4 months. The FAFS Co-op Office supports students on both a group and individual basis to develop effective job search skills to assist in securing a co-op position. Prior to starting each work term, students will register in AGRI 2002 (1st work term), AGRI 3002 (2nd work term), and AGRI 4002 (3rd work term) within the term that their co-op placement will take place and pay the associated fees. Students must submit a reflective assignment at the end of the work term and are evaluated for both overall participation and the report on a Pass/Fail basis.

Admission

Students who have been admitted to an undergraduate program within the faculty are eligible to apply to the Co-operative Education Program.

Students are advised that satisfying the entrance requirements does not guarantee a place in the Co-operative Education Program.

If a student has been found to have deliberately falsified information in the application for the Co-op Program, the mater will be immediately reported to Associate Dean (Academic) as an allegation of academic misconduct and handled according to the University Student Discipline Bylaw (https://catalog.umanitoba.ca/undergraduate-studies/policies-procedures/student-discipline-bylaw/).

If, prior to acceptance into the Co-op Program, it is found that the student has had an allegation of academic misconduct upheld against them, the student may no longer be eligible for entrance to the FAFS Co-op Education Program.

Degree Program

Co-op applicants should have completed 24 but not more than 90 credit hours towards their degree by the start of their first work term (this will support the completion of 3 work terms). Ideally, the first work term would take place at the end of the second academic year allowing students to pursue professional development activities in year one. However, with approval of the FAFS Co-op Office, the first work term could commence after the first year of a 4-year or Second-Degree program.

Students admitted into the Program must maintain Good Academic Standing (minimum DGPA of 2.0).

Diploma Program

To be considered for admission in the Cooperative Education Program, a first year diploma student must have a minimum Degree GPA of 2.0, and have completed at least 24 credit hours of studies by the end of the academic year of application.

Academic Term Requirements:

Co-operative Education Option students are required to maintain full-time study (minimum 9 credit hours) while registered for an academic term in between work terms.

Students may be required to withdraw from the Co-operative Education Option form any of the following reasons:

- Failure to maintain the minimum academic requirements of the Faculty of Agriculture and Food Sciences.
- Failure to maintain the minimum credit hour requirements of the academic term in the Co-op Option.
- Unsatisfactory performance during a co-op work term.
- Failure to achieve a "Pass" grade in the associated co-op.
- Failure to observe to policies outlined in university governing documents related to Behavioural Policies and Academic Misconduct.
- In opinion of Co-op Coordinators, the student does not possess sufficient ability, skills, aptitude, attitude, diligence or motivation to successfully complete the Co-operative Education Option.

Students are not normally permitted to withdraw from the Co-operative Education Option once they have secured a position for their co-op work term; whether the position was obtained through the FAFS Co-op Office or through students' own self-directed job search. Enrollment in the applicable co-op course (s) will be maintained and students are responsible for all assessed fees for the duration of the co-op work term and for meeting all academic requirements.

Students must end their degree program on an academic term, except by special permission from the FAFS Co-op Office.

Employment Term Requirements:

Prior to starting the work term, students are required to register in the appropriate Agricultural and Food Sciences Co-operative Education Work Term Course within the set deadlines and pay the fee. Successful completion of a work term includes participating in a mid-work term meeting with Co-op Coordinator and completion of a written work term report at the end of each work term.

The student will receive three credit hours for completing each co-op work term and earning a "Pass" grade in each associated co-op course. Each work term is record on the student's academic record and transcript.

In order to receive a co-op designation on their degree parchment, a degree student complete three full time, paid co-op work terms (minimum of 420 hours each) with a FAFS Co-op Office approved employer(s), although each co-op work term is optional.

Although each co-op work term is optional, a degree student must complete three co-op work terms (minimum 420 hours each) with a faculty FAFS Co-op Office approved employer(s) in order to receive a co-op designation on their degree parchment. Diploma students receive a co-op designation after the successful completion of one co-op work term.

During a work term, a co-op student may take a maximum of one additional course worth up to six credit hours for a total of (9) credit hours. If a student would like to request to take an additional 3 credit hour course while on a co-op work term, they must have written approval from their employer, as well as permission from the FAFS Co-op Office.