BIOLOGICAL SCIENCES, B.SC. HONOURS

Biological Sciences Honours Entrance, Continuation, and Graduation Requirements

The Honours program is recommended for students planning a professional career in Biological Sciences at the graduate level. Such students are strongly advised to enter the Honours program at the beginning of second year.

To enter the Biological Sciences Honours program a student must have completed at least 24 credit hours with a minimum DGPA of 3.00, and obtained a minimum grade of "B" in BIOL 1030. CHEM 1100, CHEM 1110 (if required for the concentration), CHEM 1120, STAT 1150 or STAT 1000, and the 6 credit hours of specified Mathematics or Physics courses are program requirements and students are strongly encouraged to complete these courses by the end of their second year.

To continue in the Biological Sciences Honours program, students must maintain a minimum DGPA of 3.00, and complete a minimum of 9 credit hours during each Fall and Winter Term.

To graduate with the B.Sc. Honours degree, a student must achieve a minimum DGPA of 3.00, and obtain a minimum grade of "C" on the courses that make up the 120 credit hours of the degree.

Honours Co-operative Option

A co-operative education option is available for Honours students. Students should refer to the Co-operative Education (p. 6)section for further information on the Co-op programs.

The course, grade requirements and minimum DGPA requirement for entry and continuation in the Co-operative Option are the same as that for the regular Honours program.

Before starting the first co-op work term, the following courses must be completed:

Course	Title	Hours
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 1120	Introduction to Chemistry Techniques	3
STAT 1150 or STAT 1000	Introduction to Statistics and Computing Basic Statistical Analysis 1	3
6 credit hours of specified Mathematics or Physics		6
BIOL 2300 or BIOL 2390	Principles of Ecology Introductory Ecology	3
BIOL 2500	Genetics 1	3
BIOL 2520	Cell Biology	3
BIOL 3100	Skills in Biological Sciences	3
In addition, students must complete 9-12 credit hours from program courses as **outlined in the specific program grids**.		9-12

Degree Requirements

Honours: Biological Sciences (Including Co-operative Option if Selected)

Important Note[1]

Course	Title	Hours
Year 1		
BIOL 1020	Biology 1: Principles and Themes	3
BIOL 1030	Biology 2: Biological Diversity, Function and Interactions (B)	3
CHEM 1100	Introductory Chemistry 1: Atomic and Molecular Structure and Energetics [2]	3
CHEM 1120	Introduction to Chemistry Techniques [2]	3
STAT 1150 or STAT 1000	Introduction to Statistics and Computing [3] or Basic Statistical Analysis 1	3
	Hours	**15**
Years 1-2		
6 credit hours of Mathematics/Physics from:		6
MATH 1240	Elementary Discrete Mathematics [4]	
MATH 1300	Vector Geometry and Linear Algebra [4]	
MATH 1500	Introduction to Calculus [4]	
MATH 1700	Calculus 2 [4]	
PHYS 1020 or PHYS 1050	General Physics 1 or Physics 1: Mechanics	
6 credit hours from the Faculty of Arts including a required "W" course		6
15 credit hours of electives		15
	Hours	**27**
Year 2		
BIOL 2300	Principles of Ecology	3
or		
BIOL 2390	Introductory Ecology [5]	
BIOL 2500	Genetics 1	3
BIOL 2520	Cell Biology	3
One of: [6]		3
BIOL 2200	The Invertebrates	
BIOL 2210	The Chordates	
BIOL 2240	The Non-Flowering Plants	
BIOL 2242	The Flowering Plants	
Two additional of: [6]		6
BIOL 2200	The Invertebrates	
BIOL 2210	The Chordates	
BIOL 2240	The Non-Flowering Plants	
BIOL 2242	The Flowering Plants	
BIOL 2260	Biology of Fungi and Lichens	
BIOL 2262	Biology of Algae	
BIOL 2420	Human Physiology 2 [7]	
BIOL 2470	Introduction to Nervous Systems	
BIOL 2600	Introduction to Computational Biology	
	Hours	**18**
Years 3-4		
BIOL 3100	Skills in Biological Sciences	3
BIOL 3300	Evolutionary Biology	3

BIOL 4100	Honours Thesis	6
33 credit hours* of 3000 or 4000 biological sciences courses including:		33
• 15 credit hours from List A		
• at least 6 credit hours at the 4000 level		
*In addition to the above requirements, students must complete the balance of credit hours by taking any 3000 or 4000 level BIOL courses, or up to 6 credit hours from List B.		
15 credit hours of electives		15
Co-op Requirements (if selected):		
SCI 3980	Co-operative Education Work Term 1	0
SCI 3990	Co-operative Education Work Term 2	0
SCI 4980	Co-operative Education Work Term 3	0
SCI 4990	Co-operative Education Work Term 4 (if 4th term selected)	0
	Hours	**60**
	Total Hours	**120**

[1] The program need not be completed in the manner prescribed in the grid above. The grid indicates one possible arrangement of the 120 credit hours that make up the degree and is meant to be a guide around which students can plan their program with a view to satisfying the prerequisites of the required courses. These 120 credit hours are a combination of the courses outlined in the grid above and elective courses chosen by the student in consultation with the program advisors.

[2] The former CHEM 1300 may be used in place of CHEM 1100 and the former CHEM 1310 may be used in place of CHEM 1110 and CHEM 1120. CHEM 1122 and CHEM 1126 may be used in place of CHEM 1120. CHEM 1122 and CHEM 1126 are restricted to Price Faculty of Engineering students.

[3] STAT 1150 is recommended over STAT 1000.

[4] Students are strongly recommended to complete the Mathematics/Physics requirements before the end of their second year.

- MATH 1200 may be used in place of MATH 1240;
- MATH 1210, MATH 1220 or MATH 1310 may be taken in place of MATH 1300;
- MATH 1230, MATH 1510, MATH 1524, or the former MATH 1520 may be taken in place of MATH 1500;
- MATH 1232 or MATH 1710 may be taken in place of MATH 1700.

[5] If a student is considering selecting the Ecology and Evolutionary Biology Concentration or taking advanced level ecology courses, they should select BIOL 2300. BIOL 2390 cannot be used in place of BIOL 2300 for prerequisite purposes. Selecting BIOL 2390 will limit the number of 3000 and 4000 level BIOL courses a student can take.

[6] These courses serve as prerequisites for many upper level BIOL courses. Students are strongly advised to plan ahead when selecting from this list. If more than 9 credit hours are taken, the extra credit hours will count as electives.

[7] BIOL 2410 is prerequisite to BIOL 2420. BIOL 2410 can be used as an elective.

(Letters in brackets indicate minimum prerequisite standing for further study.)

Honours: Molecular, Cellular, and Systems Biology Concentration (Including Co-operative Option if Selected)

Important Note[1]

Course	Title	Hours
Year 1		
BIOL 1020	Biology 1: Principles and Themes	3
BIOL 1030	Biology 2: Biological Diversity, Function and Interactions (B)	3
CHEM 1100	Introductory Chemistry 1: Atomic and Molecular Structure and Energetics [2]	3
CHEM 1110	Introductory Chemistry 2: Interaction, Reactivity, and Chemical Properties [2]	3
CHEM 1120	Introduction to Chemistry Techniques [2]	3
STAT 1150 or STAT 1000	Introduction to Statistics and Computing [3] or Basic Statistical Analysis 1	3
	Hours	**18**
Years 1-2		
6 credit hours of Mathematics/Physics from:		6
MATH 1240	Elementary Discrete Mathematics [4]	
MATH 1300	Vector Geometry and Linear Algebra [4]	
MATH 1500	Introduction to Calculus [4]	
MATH 1700	Calculus 2 [4]	
PHYS 1020 or PHYS 1050	General Physics 1 or Physics 1: Mechanics	
6 credit hours from the Faculty of Arts including a required "W" course		6
3 credit hours of electives		3
	Hours	**15**
Year 2		
BIOL 2300	Principles of Ecology	3
or		
BIOL 2390	Introductory Ecology [5]	
BIOL 2500	Genetics 1	3
BIOL 2520	Cell Biology	3
One of: [6]		3
BIOL 2200	The Invertebrates	
BIOL 2210	The Chordates	
BIOL 2240	The Non-Flowering Plants	
BIOL 2242	The Flowering Plants	
Two additional of: [6]		6
BIOL 2200	The Invertebrates	
BIOL 2210	The Chordates	
BIOL 2240	The Non-Flowering Plants	
BIOL 2242	The Flowering Plants	
BIOL 2260	Biology of Fungi and Lichens	
BIOL 2262	Biology of Algae	
BIOL 2420	Human Physiology 2 [7]	
BIOL 2470	Introduction to Nervous Systems	
BIOL 2600	Introduction to Computational Biology	
CHEM 2100	Organic Chemistry 1: Foundations of Organic Chemistry [8]	
Select Group A or Group B:		9

Group A: [8]		
CHEM/MBIO 2700	Biochemistry 1: Biomolecules and an Introduction to Metabolic Energy	
CHEM/MBIO 2710	Biochemistry 2: Catabolism, Synthesis, and Information Pathways	
CHEM 2720	Principles and Practices of the Modern Biochemistry Laboratory	
Group B: [8]		
CHEM/MBIO 2730	Elements of Biochemistry 1	
CHEM/MBIO 2750	Elements of Biochemistry 2	
CHEM 2740	Introduction to the Biochemistry Laboratory	
	Hours	**27**
Years 3-4		
BIOL 3100	Skills in Biological Sciences	3
BIOL 3300	Evolutionary Biology	3
BIOL 4100	Honours Thesis	6
33 credit hours* of 3000 or 4000 biological sciences courses including:		33
• 15 credit hours from List A		
• 12 credit hours from List C		
• at least 6 credit hours at the 4000 level		
*Where a completed course appears on both List A and List C, the course will count toward the first two requirements listed above.		
*In addition to the above requirements, students must complete the balance of credit hours by taking any 3000 or 4000 level BIOL courses, or up to 6 credit hours from List B.		
15 credit hours of electives		15
Co-op Requirements (if selected):		
SCI 3980	Co-operative Education Work Term 1	0
SCI 3990	Co-operative Education Work Term 2	0
SCI 4980	Co-operative Education Work Term 3	0
SCI 4990	Co-operative Education Work Term 4 (if 4th term selected)	0
	Hours	**60**
	Total Hours	**120**

1. The program need not be completed in the manner prescribed in the grid above. The grid indicates one possible arrangement of the 120 credit hours that make up the degree and is meant to be a guide around which students can plan their program with a view to satisfying the prerequisites of the required courses. These 120 credit hours are a combination of the courses outlined in the grid above and elective courses chosen by the student in consultation with the program advisors.
2. The former CHEM 1300 may be used in place of CHEM 1100 and the former CHEM 1310 may be used in place of CHEM 1110 and CHEM 1120. CHEM 1122 and CHEM 1126 may be used in place of CHEM 1120. CHEM 1122 and CHEM 1126 are restricted to Price Faculty of Engineering students.
3. STAT 1150 is recommended over STAT 1000.
4. Students are strongly recommended to complete the Mathematics/Physics requirements before the end of their second year.
   - MATH 1200 may be used in place of MATH 1240;
   - MATH 1210, MATH 1220 or MATH 1310 may be taken in place of MATH 1300;
   - MATH 1230, MATH 1510, MATH 1524, or the former MATH 1520 may be taken in place of MATH 1500;
   - MATH 1232 or MATH 1710 may be taken in place of MATH 1700.
5. BIOL 2390 cannot be used in place of BIOL 2300 for prerequisite purposes. Selecting BIOL 2390 will limit the number of 3000 and 4000 level BIOL courses a student can take.
6. These courses serve as prerequisites for many upper-level BIOL courses. Students are strongly advised to plan ahead when selecting from this list. If more than 9 credit hours are taken, the extra credit hours will count as electives.
7. BIOL 2410 is prerequisite to BIOL 2420. BIOL 2410 can be used as an elective.
8. Students are strongly recommended to complete their biochemistry requirements in their second year. The former CHEM 2360 (MBIO 2360) may be used in place of CHEM 2700 (MBIO 2700), and the former CHEM 2370 (MBIO 2370) may be used in place of CHEM 2710 (MBIO 2710) and CHEM 2720. The former CHEM 2770 (MBIO 2770) may be used in place of CHEM 2730 (MBIO 2730), and the former CHEM 2780 (MBIO 2780) may be used in place of CHEM 2740 and CHEM 2750 (MBIO 2750). If the choice of biochemistry courses includes the requirement of CHEM 2100, CHEM 2100 can be used as the additional course listed above. The former CHEM 2210 may be used in place of CHEM 2100.

(Letters in brackets indicate minimum prerequisite standing for further study.)

Honours: Ecology and Evolutionary Biology Concentration (Including Co-operative Option if Selected)

Important Note[1]

Course	Title	Hours
Year 1		
BIOL 1020	Biology 1: Principles and Themes	3
BIOL 1030	Biology 2: Biological Diversity, Function and Interactions (B)	3
CHEM 1100	Introductory Chemistry 1: Atomic and Molecular Structure and Energetics [2]	3
CHEM 1120	Introduction to Chemistry Techniques [2]	3
STAT 1150 or STAT 1000	Introduction to Statistics and Computing [3] or Basic Statistical Analysis 1	3
	Hours	**15**
Years 1-2		
6 credit hours of Mathematics/Physics from:		6
MATH 1240	Elementary Discrete Mathematics [4]	
MATH 1300	Vector Geometry and Linear Algebra [4]	
MATH 1500	Introduction to Calculus [4]	
MATH 1700	Calculus 2 [4]	
PHYS 1020 or PHYS 1050	General Physics 1 or Physics 1: Mechanics	
6 credit hours from the Faculty of Arts including a required "W" course		6

12 credit hours of electives		12
	Hours	**24**
Year 2		
BIOL 2300	Principles of Ecology [5]	3
BIOL 2500	Genetics 1	3
BIOL 2520	Cell Biology	3
One of: [6]		3
BIOL 2200	The Invertebrates	
BIOL 2210	The Chordates	
BIOL 2240	The Non-Flowering Plants	
BIOL 2242	The Flowering Plants	
Two additional of: [6]		6
BIOL 2200	The Invertebrates	
BIOL 2210	The Chordates	
BIOL 2240	The Non-Flowering Plants	
BIOL 2242	The Flowering Plants	
BIOL 2260	Biology of Fungi and Lichens	
BIOL 2262	Biology of Algae	
BIOL 2470	Introduction to Nervous Systems	
BIOL 2600	Introduction to Computational Biology	
STAT 2150 or STAT 2000	Statistics and Computing [3] or Basic Statistical Analysis 2	3
	Hours	**21**
Years 3-4		
BIOL 3100	Skills in Biological Sciences	3
BIOL 3300	Evolutionary Biology	3
One of:		3
BIOL 3310	Foundations of Population Ecology	
BIOL 3312	Community Ecology	
BIOL 4100	Honours Thesis	6
30 credit hours* of 3000 or 4000 biological sciences courses including:		30
• 15 credit hours from List A		
• 12 credit hours from List D		
• at least 6 credit hours at the 4000 level		
*Where a completed course appears on both List A and List D, the course will count toward the first two requirements listed above.		
*In addition to the above requirements, students must complete the balance of credit hours by taking any 3000 or 4000 level BIOL courses, or up to 6 credit hours from List B.		
15 credit hours of electives		15
Co-op Requirements (if selected):		
SCI 3980	Co-operative Education Work Term 1	0
SCI 3990	Co-operative Education Work Term 2	0
SCI 4980	Co-operative Education Work Term 3	0
SCI 4990	Co-operative Education Work Term 4 (if 4th term selected)	0
	Hours	**60**
	Total Hours	**120**

1 The program need not be completed in the manner prescribed in the grid above. The grid indicates one possible arrangement of the 120 credit hours that make up the degree and is meant to be a guide around which students can plan their program with a view to satisfying the prerequisites of the required courses. These 120 credit hours are a combination of the courses outlined in the grid above and elective courses chosen by the student in consultation with the program advisors.

2 The former CHEM 1300 may be used in place of CHEM 1100 and the former CHEM 1310 may be used in place of CHEM 1110 and CHEM 1120. CHEM 1122 and CHEM 1126 may be used in place of CHEM 1120. CHEM 1122 and CHEM 1126 are restricted to Price Faculty of Engineering students.

3 STAT 1150 is recommended over STAT 1000 and STAT 2150 is strongly recommended over STAT 2000. Note STAT 2150 has a prerequisite of MATH 1500 or other alternative.

4 Students are strongly recommended to complete the Mathematics/Physics requirements before the end of their second year.

- MATH 1200 may be used in place of MATH 1240;
- MATH 1210, MATH 1220 or MATH 1310 may be taken in place of MATH 1300;
- MATH 1230, MATH 1510, MATH 1524, or the former MATH 1520 may be taken in place of MATH 1500;
- MATH 1232 or MATH 1710 may be taken in place of MATH 1700.

5 BIOL 2390 cannot be used as a prerequisite for any other ecology courses. Students interested in completing the Ecology and Evolutionary Biology program must take BIOL 2300.

6 These courses serve as prerequisites for many upper level BIOL courses. Students are strongly advised to plan ahead when selecting from this list. If more than 9 credit hours are taken, the extra credit hours will count as electives.

(Letters in brackets indicate minimum prerequisite standing for further study.)

Honours Program Course Lists

List A – Biological Sciences courses with laboratory or field components

Course	Title	Hours
BIOL 3242	Vascular Flora of Manitoba	3
BIOL 3250	Lichens and Bryophytes	3
BIOL 3270	Introductory Parasitology	3
BIOL 3310	Foundations of Population Ecology	3
BIOL 3312	Community Ecology	3
BIOL 3314	Field Ecology	3
BIOL 3350	Data Analysis in Ecology	3
BIOL 3370	Limnology	3
BIOL 3372	Wetland Ecology	3
BIOL 3400	Plant Physiology	3
BIOL 3452	Environmental Plant Physiology	3
BIOL 3470	Environmental Physiology of Animals 1	3
BIOL 3472	Environmental Physiology of Animals 2	3
BIOL 3500	Genetics 2	3
BIOL 3550	Plant Anatomy	3
BIOL 3560	Comparative Animal Histology	3
BIOL 4210	Biology of Fishes	3
BIOL 4212	Systematics and Biogeography of Fishes	3
BIOL 4214	Biology of Amphibians and Reptiles	3
BIOL 4216	Biology of Birds	3

BIOL 4218	Biology of Mammals	3
BIOL 4262	Wildlife and Fisheries Parasitology	3
BIOL 4310	Applications of Population Ecology in Fisheries and Wildlife	3
BIOL 4314	Arctic Field Ecology	3
BIOL 4362	Behavioural Ecology and Cognitive Ethology	3
BIOL 4380	Environmental Toxicology	3
BIOL 4510	Evolutionary Genetics	3
BIOL 4540	Developmental Molecular Biology	3
BIOL 4544	Advanced Developmental and Cellular Biology	3
BIOL 4554	Molecular Biology Techniques for Eukaryotes - DNA	3
BIOL 4556	Molecular Biology Techniques for Eukaryotes - RNA	3
BIOL 4560	Microtechnique	3

List B – Acceptable courses for 3000 or 4000 level credit from other units

Course	Title	Hours
ANSC 3500	Principles of Animal Genetics	3
ANSC 4410	Grassland Agriculture: Plant, Animal and Environment	3
BGEN 3022	Introduction to Human Genetics A	3
BGEN 3024	Introduction to Human Genetics B	3
CHEM 4360	Signalling and Regulation of Gene Expression	3
CHEM 4620	Biochemistry of Nucleic Acids	3
CHEM 4630	Biochemistry of Proteins	3
CHEM 4670	Drug Design and Drug Discovery	3
ENTM 3160	Veterinary and Wildlife Entomology	3
ENTM 3162	Manitoba's Insect Fauna	3
ENTM 3170	Crop Protection Entomology	3
ENTM 3180	Field Techniques in Entomology	3
ENTM 3190	Introduction to Applied Entomology	3
ENTM 4280	Aquatic Entomology	3
ENTM 4320	Pollination Biology	3
ENTM 4500	Insect Taxonomy and Morphology	3
ENTM 4520	Physiological Ecology of Insects	3
GEOL 3310	Paleontology	3
MBIO 3000	Applied Biological Safety	3
MBIO 3010	Mechanisms of Microbial Disease	3
MBIO 3282	Microbial Communities	3
MBIO 3410	Molecular Biology	3
MBIO 3430	Molecular Evolution	3
MBIO 3450	Regulation of Biochemical Processes	3
MBIO 3460	Membrane and Cellular Biochemistry	3
MBIO 4020	Immunology	3
MBIO 4602	Molecular Genetics of Prokaryotes - Lectures	3
MBIO 4612	Molecular Genetics of Eukaryotes - Lectures	3
MBIO 4672	Applied Molecular Biology	3
PHAC 3000	Foundations of Pharmacology	3
PHAC 4030	Drugs in Human Disease I	3
PHAC 4040	Drugs in Human Disease II	3
PLNT 3520	Principles of Plant Improvement	3
PLNT 3570	Fundamentals of Plant Pathology	3
PLNT 4330	Intermediate Plant Genetics	3
PLNT 4410	Grassland Agriculture: Plant, Animal and Environment	3

List C – Discipline-specific courses for Molecular, Cellular, and Systems Biology concentration

Course	Title	Hours
BIOL 3400	Plant Physiology	3
BIOL 3452	Environmental Plant Physiology	3
BIOL 3470	Environmental Physiology of Animals 1	3
BIOL 3472	Environmental Physiology of Animals 2	3
BIOL 3500	Genetics 2	3
BIOL 3542	Developmental Biology	3
BIOL 3560	Comparative Animal Histology	3
BIOL 4400	Revegetation of Disturbed Lands	3
BIOL 4460	Comparative Animal Energetics	3
BIOL 4470	Physiology of Excitable Cells	3
BIOL 4480	Comparative Endocrinology	3
BIOL 4500	Molecular Genetics of Plant Development	3
BIOL 4510	Evolutionary Genetics	3
BIOL 4540	Developmental Molecular Biology	3
BIOL 4542	Genes and Development	3
BIOL 4544	Advanced Developmental and Cellular Biology	3
BIOL 4554	Molecular Biology Techniques for Eukaryotes - DNA	3
BIOL 4556	Molecular Biology Techniques for Eukaryotes - RNA	3
BIOL 4560	Microtechnique	3
BIOL 4570	Developmental Neuroscience	3

List D – Discipline-specific courses for Ecology and Evolutionary Biology concentration

Course	Title	Hours
BIOL 3200	Advanced Invertebrate Biology	3
BIOL 3242	Vascular Flora of Manitoba	3
BIOL 3250	Lichens and Bryophytes	3
BIOL 3270	Introductory Parasitology	3
BIOL 3280	Forest Botany	3
BIOL 3290	Medicinal and Hallucinogenic Plants	3
BIOL 3310	Foundations of Population Ecology	3
BIOL 3312	Community Ecology	3
BIOL 3314	Field Ecology	3
BIOL 3318	Boreal Ecology	3
BIOL 3340	Biology of Primitive Fungi and Allies	3
BIOL 3350	Data Analysis in Ecology	3
BIOL 3360	Animal Behaviour	3
BIOL 3370	Limnology	3
BIOL 3372	Wetland Ecology	3
BIOL 4210	Biology of Fishes	3
BIOL 4212	Systematics and Biogeography of Fishes	3
BIOL 4214	Biology of Amphibians and Reptiles	3
BIOL 4216	Biology of Birds	3
BIOL 4218	Biology of Mammals	3

BIOL 4220	Marine Biodiversity	3
BIOL 4262	Wildlife and Fisheries Parasitology	3
BIOL 4300	Evolution and Adaptation	3
BIOL 4310	Applications of Population Ecology in Fisheries and Wildlife	3
BIOL 4312	Analysis of Biological Communities	3
BIOL 4314	Arctic Field Ecology	3
BIOL 4330	Plant Interactions	3
BIOL 4362	Behavioural Ecology and Cognitive Ethology	3
BIOL 4374	Aquatic Botany	3
BIOL 4380	Environmental Toxicology	3

Co-operative Education Option Academic Regulations: B.Sc. (Major) & B.Sc. and B.C.Sc. (Honours)

Co-operative education is a form of experiential learning which integrates the academic education (classroom-based learning) of interested and qualified students with relevant, supervised, and paid work experience (work-based learning) with employers. Co-op students gain valuable skills to guide them through their academic education and prepare them for future careers after graduation.

The Faculty of Science offers a Co-operative Education Option in the following Major programs:

- Biochemistry
- Biological Sciences
- Chemistry
- Computer Science
- Data Science
- Genetics
- Mathematics
- Microbiology
- Physics & Astronomy
- Psychology
- Statistics.

The Honours programs offering a Co-operative Education Option are:

- Biochemistry
- Biological Sciences
- Chemistry
- Computer Science
- Genetics
- Mathematics
- Microbiology
- Physics & Astronomy
- Statistics
- Joint Computer Science – Mathematics
- Joint Computer Science – Physics and Astronomy
- Joint Computer Science – Statistics
- Joint Mathematics – Physics and Astronomy
- Joint Statistics – Mathematics program.

Co-operative education is optional and supplementary to academic requirements of the chosen degree. All regulations governing regular Major and Honours programs apply to the Co-operative Education Option. In addition, the following variations apply:

Entrance

To enter the Co-operative Education Option a student must be eligible to enter the Major or Honours program offered by the department. At the time of application, students must have a minimum Degree Grade Point Average (DGPA) of 2.5 for the Major and 3.0 for the Honours Programs. For Psychology, students must have a minimum Degree Grade Point Average (DGPA) of 3.0 for the Major. Co-op is not available for students in the Honours Psychology Program.

The normal point of entry to the Co-operative Education Option is following the completion of second year in the Faculty of Science. Students seeking admission will submit an application during their second year and complete an intake process with the appropriate departmental Co-op Coordinator. Application deadlines are established by the Science Co-op Office.

Students are advised that satisfying the entrance requirements does not guarantee a place in the Co-operative Education Option. The Science Co-op Office reserves the right to determine and select the best-qualified applicants.

Students admitted into the Co-operative Education Option will complete pre-employment training, including workshops, prior to the start of their first co-op work term. The structure and content of this training is developed by the Science Co-op Office. Attendance and completion of this training is mandatory.

Structure and Sequencing

The Co-operative Education Option consists of both academic terms and co-op work terms.

Each academic term can be either four months in duration or eight months in duration, as designated by the Major or Honours department.

Each co-op work term can be either four months in duration or eight months in duration, as designated by the Science Co-op Office. An eight month work term would be counted as the equivalent of two 4 month terms.

Each academic term and each co-op work term will commence in January, May or September.

The sequence of academic terms and co-op work terms is variable to suit the needs of each department, and is designated by the Science Co-op Office in conjunction with each Major or Honours department. All Faculty of Science Co-operative Education Options must end on an academic term.

Students are expected to follow the academic/co-op work term sequence defined by their Major or Honours department from admission through to graduation.

Co-op Work Term Requirements

All Co-operative Education Options require participating students to complete at least three (3) 4-month co-op work terms for a total of a minimum of 12 months' work experience. Each co-op work term is completed with one employer.

Students are required to register in the appropriate co-op work term course and pay the work term fee prior to starting their co-op work term.

Co-operative Education Option students are required to submit a work term report at the end of each co-op work term. These reports are due at times designated by the Science Co-op Office. In order to remain in the Co-operative Education program, a student must obtain a grade of "Pass" for each work term report. The Science Co-op Office will provide students with instructions regarding the content and format requirements of the work term reports.

While on a co-op work term, students are not permitted to take more than six hours of academic credit, and may not take more than one course at a time.

Academic Term Requirements

Coursework requirements of the Co-operative Education Option are equivalent to the coursework requirements of the four-year Major program. For students completing an Honours program, the coursework requirements of the Co-operative Education Option are equivalent to the coursework requirements of the Honours program with the exception of the Biochemistry, Genetics and Microbiology programs.

Co-operative Education Option students are required to maintain full-time study while registered for an academic term.

To continue in a four year Major Co-operative Education Option, students must maintain a minimum DGPA of 2.50 at each point of assessment; except for students in Psychology where a minimum DGPA of 3.00 must be maintained at each point of assessment. A student's performance will be evaluated following each academic term. In addition, the student must meet all individual course prerequisites for further study and departmental continuation and graduation requirements. Please see department entries for further information. Continuation in the Major Co-operative Education Option is also contingent upon satisfactory performance during co-op work terms.

To continue in an Honours Co-operative Education Option a student must maintain a minimum DGPA of 3.00 or higher at each point of assessment. A student's performance will be evaluated following each academic term. In addition, the student must meet all individual course prerequisites for further study and departmental continuation and graduation requirements. Please see department entries for further information. Continuation in the Honours Co-operative Education Option is also contingent upon satisfactory performance during co-op work terms.

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

- Failure to maintain the minimum academic requirements of the Faculty of Science and/or Major/Honours program.
- 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 submit a co-op work term report or the submitted report does not achieve a "Pass" grade.
- Failure to observe the policies outlined in university governing documents related to Behavioural Policies and Academic Misconduct.
- Having consulted with the Co-op Director and/or Faculty Advisor, in the opinion of the Co-op Coordinator, the student does not possess sufficient ability, skills, aptitude, attitude, diligence or motivation to successfully complete the Co-operative Education Option.

Students who wish to voluntarily withdraw from the Co-operative Education Option must obtain the written approval from their Co-op Coordinator and the Science Co-op Director. Students must submit their withdrawal request to their Co-op Coordinator and receive approval by the withdrawal dates set by the Science Co-op Office for each co-op work term.

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 Science 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 who accumulate more than 18 credit hours of failed courses after entering the four-year Major program (regardless of the origin of the grade or if the course has been repeated) will be required to withdraw from the Major Co-op program. Students are also subject to the academic assessment policy found in the Faculty Academic Regulations (https://catalog.umanitoba.ca/undergraduate-studies/science/#facultyacademicregulationstext).

Students who accumulate more than 15 credit hours of failed courses after entering the Honours degree program (regardless of the origin of the grade or if the course has been repeated) will be required to withdraw from the Honours Co-op program. Students required to withdraw from the Honours program may be eligible to pursue the B.Sc. Major program or the B.Sc. General degree program. Students are also subject to the academic assessment policy found in the Faculty Academic Regulations (https://catalog.umanitoba.ca/undergraduate-studies/science/#facultyacademicregulationstext).

Four year Major Co-operative Education Option students who are required to withdraw, or voluntarily revert to an alternative degree program must fulfil all academic requirements of that degree.

Honours Co-operative Education Option students who are required to withdraw or voluntarily revert to an alternative degree program must fulfill all academic requirements of that degree.