

# Bachelor of Science - Biology 2020 - 21

STUDENT NAME:

STUDENT ID #:

ADMISSION YEAR/CATALOGUE YEAR:



MOUNT ROYAL  
UNIVERSITY  
1910

Faculty of  
Science and Technology

## YEAR ONE - FALL

BIOL 1202 <sup>F</sup>	Introduction to Cell Biology	
CHEM 1201 <sup>F</sup>	General Chemistry – Structure and Bonding	
MATH 1200 <sup>FW</sup>	Calculus for Scientists I	
PHYS 1201 <sup>F</sup>	Classical Physics I	
GNEED Foundation <sup>FW</sup> Cluster 1	One of: GNEED 1101 or 1103	

## YEAR ONE - WINTER

BIOL 1204 <sup>W</sup>	Evolution of Eukaryotes	
CHEM 1202 <sup>W</sup>	General Chemistry – Introduction to Quantitative Chemistry	
PHYS 1202 <sup>W</sup>	Classical Physics II (pre-req: MATH 1200 and PHYS 1201)	
GNEED Foundation <sup>FW</sup> Cluster 2	One of: GNEED 1201, 1202, 1203 or 1204	
GNEED Foundation <sup>FW</sup> Cluster 4	One of: GNEED 1401 or 1404	

## YEAR TWO - FALL

BIOL 2101 <sup>FW</sup>	Genetics	
BIOL 2213 <sup>F</sup>	Principles of Ecology & Evolution	
BIOL 2110 <sup>F</sup>	Vertebrate Anatomy & Physiology	
CHEM 2101 <sup>FW</sup>	Organic Chemistry I	
One Ethics course <sup>FW</sup>	One of: PHIL 2223, PHIL 2229, PHIL 2291, GEOG 2445, or INST 3740	

## YEAR TWO - WINTER

BIOL 2202 <sup>FW</sup>	Cellular Molecular Biology	
BIOL 2105 <sup>FW</sup>	Microbiology I	
BCEM 2201 <sup>FW</sup>	General Biochemistry	
MATH 2233 <sup>FW</sup>	Statistics for Biological Sciences	
GNEED Foundation <sup>FW</sup> Cluster 3	One of: GNEED 1301, 1302, 1303, or 1304	

## YEAR THREE - FALL

BIOL 3XXX <sup>F</sup>	Data Analysis for Biologists	
Concentration Course 1/Approved Option		
GNEED Tier 2 <sup>FW</sup>		
GNEED Tier 2 <sup>FW</sup>		
Elective		

## YEAR THREE - WINTER

Concentration Course 2/Approved Option		
Concentration Course 3/Approved Option		
GNEED Tier 2 <sup>FW</sup>		
GNEED Tier 3		
Elective		

## YEAR FOUR - FALL

Concentration Course 4/Approved Option		
Concentration Course 5/Approved Option		
Concentration Course 6/Approved Option		
GNEED Tier 3		
Elective		

## YEAR FOUR - WINTER

One of: BIOL 5301, 5208, or 5203 <sup>W</sup>	Capstone course for Biology	
Concentration Course 7/Approved Option		
Concentration Course 8/Approved Option		
GNEED Tier 3		
Elective		

### PLEASE READ:

**Planning your major:** In addition to the core courses listed on the program planning guide, choose one area of concentration, OR an additional eight (8) Approved Options (AO), detailed on pg. 2 of this guide.

**General Education:** General Education approved courses, otherwise known as “GNEED requirements” are designed to give you a well-rounded knowledge base and are organized into 4 thematic clusters. Each Cluster has three levels: tier 1 (foundation), tier 2 and tier 3.

Cluster 1: Numeracy & Scientific Literacy  
Cluster 2: Values, beliefs & Identity  
Cluster 3: Community & Society  
Cluster 4: Communication

Students must take a foundation level from each of the four clusters, three tier 2 GNEEDs (one from each of cluster 2, 3, and 4), and a total of three tier 3 GNEEDs from at least two clusters, for a total of 10 GNEED courses. Visit [mru.ca/gned](http://mru.ca/gned) for more information and a list of GNEED courses.

**Junior courses** are courses at the 1000 level. Students are allowed a maximum of 16 junior courses for graduation purposes.

**Electives** are *any* 3-credit course. It is advised that students in this major select senior level electives wherever possible to avoid exceeding the 16 junior course limit.

**Prerequisites and course descriptions** can be found in the Academic Calendar under the courses link at <https://catalog.mtroyal.ca/>

**Advising Plan:** This plan factors in prerequisite requirements and will allow you to complete your degree in four years provided you complete five courses per semester and attain the **necessary required grade (C-) in your prerequisites**. To be considered full time, a student must be enrolled in a minimum of three, three-credit courses. Please make note that core third- and fourth-year courses are offered only *once per year* and should be noted if a reduced course load is being considered.

“F” Indicates that the course is offered in Fall semester only.  
“W” Indicates that the course is offered in Winter semester only.

“FW” Indicates that the course is offered in both Fall and Winter semesters.

Students should check the Spring/Summer course listings in March when the schedule of classes is released to determine what offerings *may be* available for Spring/Summer. (Spring/Summer terms are 6.5 weeks in duration and are considered optional).

In addition to the core courses listed on the program planning guide (pg 1), declare an area of concentration as detailed below OR choose an additional eight (8) Approved Options (AO) from the list below. When planning your courses review prerequisite requirements and verify when courses may be offered (<https://catalog.mtroyal.ca>). All courses are subject to availability.

**Concentration 1: Cellular Molecular Biology (8 courses):**

Required courses:

BIOL 3101 - Molecular Genetics <sup>F</sup>  
BIOL 3102 – Cell Dynamics and Signaling <sup>W</sup>  
BIOL 3105 - Microbiology II <sup>FW</sup>  
BIOL 3203 – Genomes <sup>F</sup>  
BIOL 4101 - Advanced CMB I <sup>F</sup>  
BIOL 4202 - Advanced CMB II <sup>W</sup>  
BCEM 3201 - Protein Biochemistry <sup>F</sup>

Approved Options:

1 other Biology Approved Option

**Concentration 2: Ecology and Evolution (8 courses):**

Required courses:

BIOL 3106 - Evolutionary Biology <sup>F</sup>  
BIOL 3108 - Conservation Biology <sup>F</sup>  
BIOL 3301 - Animal Behaviour <sup>W</sup>  
BIOL 4310 - Molecular Ecology <sup>F</sup>  
BIOL 4410 - Population and Conservation Genetics  
BIOL 4XXX - Field Biology

Approved Options:

2 other Biology Approved Options

**Concentration 3: Anatomy & Physiology (8 courses):**

Required courses:

Choose six courses from:

BIOL 2203 - Human Anatomy <sup>FW</sup>  
BIOL 3104 - Human Physiology I <sup>F</sup>  
BIOL 3105 - Microbiology II <sup>FW</sup>  
BIOL 3204 – Histology <sup>FW</sup>  
BIOL 3205 - Human Physiology II <sup>W</sup>  
BIOL 4102 – Pathophysiology <sup>W</sup>  
BIOL 4207 – Embryology <sup>F</sup>  
BIOL 4209 – Neuroscience <sup>W</sup>  
BIOL 4211 - Applied Human Physiology <sup>F</sup>

Approved Options:

2 other Biology Approved Options

**OR Choose eight Approved Options (AO):**

BIOL 2203 - Human Anatomy <sup>FW</sup>  
BIOL 2214 - Invertebrate Zoology  
BIOL 3101 - Molecular Genetics <sup>F</sup>  
BIOL 3102 - Cell Dynamics and Signaling <sup>W</sup>  
BIOL 3104 - Human Physiology I <sup>F</sup>  
BIOL 3105 - Microbiology II <sup>FW</sup>  
BIOL 3106 - Evolutionary Biology <sup>F</sup>  
BIOL 3108 - Conservation Biology <sup>F</sup>  
BIOL 3203 - Genomes <sup>F</sup>  
BIOL 3204 - Histology <sup>FW</sup>  
BIOL 3205 - Human Physiology II <sup>W</sup>  
BIOL 3301 - Animal Behaviour <sup>W</sup>  
BIOL 4101 - Advanced CMB I <sup>W</sup>  
BIOL 4102 - Pathophysiology <sup>W</sup>  
BIOL 4202 - Advanced CMB II <sup>W</sup>  
BIOL 4207 - Embryology <sup>F</sup>  
BIOL 4209 - Neuroscience <sup>W</sup>  
BIOL 4211 - Applied Human Physiology <sup>F</sup>  
BIOL 3299/4299 - Directed Readings <sup>FW</sup>  
BIOL 4310 - Molecular Ecology <sup>F</sup>  
BIOL 5201 - Independent Studies I <sup>FW</sup>  
BIOL 5202 - Independent Studies II <sup>FW</sup>  
BCEM 3201 - Protein Biochemistry <sup>F</sup>  
BCEM 3202 - Enzymes & Metabolic Systems <sup>W</sup>  
COMP 2001 - Intro. Computer Based Problem Solving for Sciences <sup>FW</sup>  
GEOG 2553 - GIS <sup>FW</sup>  
GEOG 3553 - Spatial Analysis and GIS <sup>W</sup>

**Approved Options Restrictions:**

- Maximum of two courses at 2000-level.
- Maximum of two non BIOL-prefixed courses.
- Minimum of two courses at the 4000-level or higher.