Bachelor of Science: Biology 2025/26

MOUNT ROYAL UNIVERSITY
Faculty of Science and Technology

✓	YEAR ONE - Fall	✓	YEAR ONE - Winter
	BIOL 1202 - Introduction to Cell Biology		BIOL 1204 - Evolution of Eukaryotes
	CHEM 1201- General Chemistry: Structure and Bonding		CHEM 1202 - General Chemistry: Introduction to Quantitative Chemistry
	MATH 1200 - Calculus for Scientists I		PHYS 1202 - Classical Physics II
	PHYS 1201 - Classical Physics I		MATH 2233 or MATH 2234 – Statistics
	GNED Foundation Cluster 1: one of GNED 1101 or 1103		GNED Foundation Cluster 4: one of GNED 1401, 1403 or 1404

Many courses are prerequisites for upper year courses. Check prerequisites and scheduling at https://catalog.mtroyal.ca

✓	YEAR TWO - complete the following courses*
	BIOL 2101 - Genetics - *Fall*
	CHEM 2101 - Organic Chemistry I - *Fall*
	BIOL 2202 - Cellular and Molecular Biology - *Winter*
	BCEM 2201 - General Biochemistry - *Winter*
	BIOL 2105 - Microbiology I - *Winter*
	BIOL 2110 - Comparative Vertebrate Anatomy & Physiology
	BIOL 2213 - Principles of Ecology & Evolution
	Biology Ethics, one of: PHIL 2223, PHIL 2229, PHIL 2291, GEOG 2445, or INST 3740
	GNED Foundation Cluster 2: one of GNED 1201, 1202, or 1203
	GNED Foundation Cluster 3: one of GNED 1301, 1302, or 1303

*The *Fall/Winter* notations indicate when you **should** be planning to take core courses. **Certain core courses may have prerequisites that need to be completed in a particular sequence to avoid delays in graduation. In addition, many senior courses are only offered once per year.** If there is no notation, this course should be completed in year two but may be offered in either semester.

It is your responsibility to plan your schedule and make sure that you are meeting necessary requirements. Consider consulting your advisor if you require clarification. ***If you require a reduced course load, please consult your advisor for guidance when planning.***

YEAR THREE - complete the following courses

✓	CORE course requirements:	✓	General Education and Electives:
	BIOL 3401 - Big Questions & Big Data		GNED Tier 2 Cluster 2: _____
	Concentration Course/Approved Option		GNED Tier 2 Cluster 3: _____
	Concentration Course/Approved Option		GNED Tier 2 Cluster 4: _____
	Concentration Course/Approved Option		Elective course:
	Concentration Course/Approved Option		Elective course:

Be sure you are checking prerequisites and scheduling at https://catalog.mtroyal.ca
Approved Option courses and Concentration courses are listed on page 2.

YEAR FOUR - complete the following courses

✓	CORE course requirements:	✓	General Education and Electives:
	Concentration Course/Approved Option:		GNED Tier 3 (Cluster ___):
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	Concentration Course/Approved Option:		GNED Tier 3 (Cluster ___):
	Concentration Course/Approved Option:		Elective course:
	Capstone, one of: BIOL 5203, 5208, 5210, or 5301 - *Winter*		Elective course:

Take two Tier 3 courses from a minimum of two different clusters, take the third Tier 3 course from any cluster.

PLEASE READ:

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

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

General Education: General Education approved courses, otherwise known as "GNED 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 GNEDs (one from each of cluster 2, 3, and 4), and a total of three tier 3 GNEDs from at least two clusters, for a total of 10 GNED courses. Visit mru.ca/gned for more information and a list of GNED courses.

Junior courses are courses at the 1000 level. 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.

Advising Plan: This guide 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.

Please note: most senior courses are only offered once per year, some alternate years - keep this in mind when planning, particularly when completing a reduced course load.

It is your responsibility to plan your schedule, ensure you meet prerequisites, and graduation requirements. If you require a reduced course load please consult your advisor for guidance when planning.

This document is only intended to be a guide for students and should be cross-referenced with the current Mount Royal University Academic Calendar which states academic policies and degree requirements. This can change yearly and improve to allow for more options and new courses. Be sure to consult with your Academic Advisor to confirm these changes, graduation requirements, or if you have any questions at scitechadvising@mtroyal.ca

Declare an area of concentration OR choose eight (8) Approved Options (AO) from the list below.

When planning your courses review descriptions & prerequisite requirements (https://catalog.mtroyal.ca). All courses are subject to changes, availability, and scheduling, all of which can vary by semester and year.

IMPORTANT TIP: confirm the prerequisites for the capstone and senior courses early on and prepare accordingly, working backwards.

Please note: *most senior courses are only offered once per year, some alternate years, subject to changes*

Choose one Concentration:

Anatomy & Physiology (8 courses):

Required courses:
BIOL 2203 - Human Anatomy take by 3rd year FALL
BIOL 3104 - Human Physiology I FALL
BIOL 3204 - Medical Histology
BIOL 3205 - Human Physiology II WINTER

2 of the following:
BIOL 3105 - Microbiology II
BIOL 3110 - Comparative Vertebrate Biomechanics
BIOL 4102 - Pathophysiology: Mechanisms of Disease
BIOL 4207 - Human Embryology FALL
BIOL 4209 - Neuroscience
BIOL 4210 - Sensorimotor Physiology
BIOL 4211 - Applied Human Physiology
BIOL 4212 - Human Metabolism
BIOL 4408 - Special Topics in Anatomy and Physiology

2 Approved Options ->

Cellular Molecular Biology (8 courses):

Required courses:
BIOL 3101 - Molecular Genetics FALL
BIOL 3102 - Cell Dynamics and Signaling WINTER
BIOL 4101 - Advanced Cellular Molecular Biology I FALL
BIOL 4202 - Advanced Cellular Molecular Biology II WINTER

2 of the following:
BIOL 3105 - Microbiology II
BIOL 3202 - Bioinformatics
BCEM 3201 - Protein Biochemistry
BIOL 4212 - Human Metabolism
BIOL 4230 - Special Topics in Cellular & Molecular Biology

2 Approved Options ->

Ecology & Evolution (8 courses):

Required courses:
BIOL 3106 - Evolutionary Biology
BIOL 3108 - Conservation Biology
BIOL 3301 - Animal Behaviour
BIOL 4320 - Field Biology Research Techniques
2 of the following:
BIOL 4310 - Molecular Ecology
BIOL 4330 – Special Topics in Ecology and Evolution
BIOL 4401 - Population & Conservation Genetics

2 Approved Options ->

OR Choose 8 Approved Options (AO):

BIOL 2203 - Human Anatomy
BIOL 2214 - Invertebrate Zoology
BIOL 3101 - Molecular Genetics FALL
BIOL 3102 - Cell Dynamics and Signaling WINTER
BIOL 3104 - Human Physiology I FALL
BIOL 3105 - Microbiology II
BIOL 3106 - Evolutionary Biology
BIOL 3108 - Conservation Biology
BIOL 3110 - Comparative Vertebrate Biomechanics
BIOL 3201 - Common Ground: Learning from the Land
BIOL 3202 - Bioinformatics
BIOL 3204 - Medical Histology
BIOL 3205 - Human Physiology II WINTER
BIOL 3301 - Animal Behaviour
BIOL 3299 **or** 4299 - Directed Readings
BIOL 4101 - Advanced Cellular & Molecular Biology I FALL
BIOL 4102 - Pathophysiology: Mechanisms of Disease
BIOL 4202 - Advanced Cellular & Molecular Biology II WINTER
BIOL 4207 – Human EmbryologyFALL
BIOL 4209 - Neuroscience
BIOL 4210 - Sensorimotor Physiology
BIOL 4211 - Applied Human Physiology
BIOL 4212 - Human Metabolism
BIOL 4230 - Special Topics in Cellular & Molecular Biology
BIOL 4310 - Molecular Ecology
BIOL 4320 - Field Biology Research Techniques
BIOL 4330 - Special Topics in Ecology and Evolution
BIOL 4401 - Population & Conservation Genetics
BIOL 4408 - Special Topics in Anatomy and Physiology
BIOL 4740 - Scientific Writing & Communication in Biology
BIOL 5201 - Independent Projects I
BIOL 5202 - Independent Projects II
BCEM 3201 - Protein Biochemistry
BCEM 3202 - Enzymes & Metabolic Systems
COMP 2001 - Computer Based Problem Solving
GEOG 2553 - Geographic Information Systems
GEOG 3553 - Spatial Analysis & GIS

Approved Option 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***

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