

Bachelor of Science: Biology 2026/27

✓ 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	MATH 2233 or MATH 2234 - Statistics
PHYS 1201 - Classical Physics I	PHYS 1202 - Classical Physics II
GNED Foundation Cluster 1: one of GNE1101 or 1103	GNED Foundation Cluster 4: one of GNE1401, 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 - <i>Fall</i>
CHEM 2101 - Organic Chemistry I - <i>Fall</i>
BIOL 2202 - Cellular and Molecular Biology - <i>Winter</i>
BCEM 2201 - General Biochemistry - <i>Winter</i>
BIOL 2105 - Microbiology I - <i>Winter</i>
BIOL 2110 - Comparative Vertebrate Anatomy & Physiology – <i>Fall or Winter</i>
BIOL 2213 - Principles of Ecology & Evolution – <i>Fall or Winter</i>
Biology Ethics, one of: PHIL 2223, PHIL 2229, PHIL 2291, GEOG 2445, or INST 3740
GNED Foundation Cluster 2: one of GNE1201, 1202, or 1203
GNED Foundation Cluster 3: one of GNE1301, 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 ____): _____
Concentration Course/Approved Option:	GNED Tier 3 (Cluster ____): _____
Concentration Course/Approved Option:	GNED Tier 3 (Cluster ____): _____
Concentration Course/Approved Option:	Elective course: _____
Capstone, one of: BIOL 5203, 5208, 5210, or 5301 - Winter only	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.

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. Carefully follow the patterns noted.

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 3rd year FALL}

BIOL 3104 - Human Physiology I ^{FALL}

BIOL 3204 - Medical Histology ^{WINTER}

BIOL 3205 - Human Physiology II ^{WINTER}

2 of the following:

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:

BCEM 3201 - Protein Analytical Biochemistry

BCEM 3202 - Enzymes and Metabolic Systems

BCEM 4201 - Lipids and Lipidomics

BIOL 3105 - Microbiology II

BIOL 3202 - Bioinformatics

BIOL 3204 - Medical Histology

BIOL 4209 - Neuroscience

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 3330 - Quantitative Ecology

BIOL 4320 - Field Biology Research Techniques

2 of the following:

BIOL 3301 - Animal Behaviour

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):

ANTH 2102 - Methods in Biological Anthropology

ANTH 2221 - Hot Topics in Human Evolution

ANTH 3321 - Human Osteology

ANTH 3322 - Human Adaptation

ANTH 3323 - Zooarchaeology

BIOL 2203 - Human Anatomy

BIOL 2214 - Invertebrate Zoology

BIOL 3101 - Molecular Genetics ^{FALL}

BIOL 3102 - Cell Dynamics and Signaling ^{WINTER}

BIOL 3103 - Introduction to Biophysics

BIOL 3104 - Human Physiology I ^{FALL}

BIOL 3105 - Microbiology II

BIOL 3106 - Evolutionary Biology

BIOL 3107 - Evolution in Health and Disease

BIOL 3108 - Conservation Biology

BIOL 3110 - Comparative Vertebrate Biomechanics

BIOL 3201 - Common Ground: Learning from the Land

BIOL 3202 - Bioinformatics

BIOL 3203 - Genomes

BIOL 3204 - Medical Histology

BIOL 3205 - Human Physiology II ^{WINTER}

BIOL 3216 - Human Physiology & Adaptation to Environmental Stress

BIOL 3301 - Animal Behaviour

BIOL 3299 **or** 4299 - Directed Readings

BIOL 3330 - Quantitative Ecology

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 Embryology ^{FALL}

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 4553 - Advanced Spatial Analysis and 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***

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