

Bachelor of Science - General Science 2023-24

✓	YEAR ONE - Fall	✓	YEAR ONE - Winter
	Concentration A (1XXX):		Concentration A (1XXX):
	Concentration B (1XXX):		Concentration B (1XXX):
	MATH 1200 - Calculus for Scientists I		MATH 2200 - Calculus for Scientists II
	GNEED Foundation Cluster 1: one of GNEED 1101 or 1103		GNEED Foundation Cluster 2: one of GNEED 1201, 1202, or 1203
	GNEED Foundation Cluster 4: one of GNEED 1401, 1403 or 1404		GNEED Foundation Cluster 3: one of GNEED 1301, 1303, or 1304

Concentration courses are listed on page 2. Many 1XXX courses are prerequisites for future courses. Check prerequisites at <http://catalog.mtroyal.ca/>

✓	YEAR TWO - complete the following courses*
	Concentration A (2XXX):
	Concentration A (2XXX):
	Concentration B (2XXX):
	Concentration B (2XXX):
	COMP 2001 - Computer-Based Problem Solving for the Sciences - <i>Fall</i>
	COMP 2008 - Scientific Computing I: Modeling and Simulation - <i>Winter</i>
	MATH 1203 - Linear Algebra for Scientists and Engineers
	MATH 2234 - Concepts of Mathematical Statistics
	GNEED Tier 2 Cluster 2:
	GNEED Tier 2 Cluster 3:

*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, some courses are only offered in 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 ensure you meet graduation requirements. Consider consulting your advisor if you are uncertain or require clarification.

YEAR THREE - complete the following courses			
✓	CORE requirements:	✓	General Education and Electives:
	Concentration A (3XXX):		GNEED Tier 2 Cluster 4:
	Concentration A (3XXX):		GNEED Tier 3 (Cluster ___):
	Concentration B (3XXX):		Elective course:
	Concentration B (3XXX):		Elective course:
	General Science Option:		
	General Science Option:		

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

YEAR FOUR - complete the following courses			
✓	CORE requirements:	✓	General Education and Electives:
	General Science Option:		GNEED Tier 3 (Cluster ___):
	General Science Option:		GNEED Tier 3 (Cluster ___):
	General Science Option:		Elective course:
	General Science Option:		Elective course:
	SCIE 5010 - Senior Student Seminar		
	SCIE 5020 - Interdisciplinary Project		

More information about General Science Options and Concentrations are listed on page 2.

PLEASE READ:

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

Major: Choose two concentrations from Biology, Chemistry, Geography, Geology, Mathematics or Physics (more info on page 2).

Selecting General Science Options: information related to General Science Options (GSOs) is on the second page of this document. Please see your Academic Advisor for more information on this requirement.

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

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

General Education: General Education courses, otherwise known as "GNEED requirements", are designed to give you a well-rounded knowledge base and are organized into four thematic clusters.

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

Each Cluster has 3 levels: tier 1 (foundation), tier 2 and tier 3. 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.

For more information and a list of GNEED courses, visit [General Education](#) and click 'courses' on the left-hand navigation.

This document is only intended as a guide for students and should be cross-referenced with the [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

Concentrations and General Science Options: 2023-2024 Academic Calendar

Students must choose two concentrations from the disciplines below for graduation purposes
Senior-level courses are only offered once per year and seats will be limited

Biology Concentration

BIOL 1202 – Introduction to Cell Biology
BIOL 1204 – Evolution of Eukaryotes
BIOL 2101 – Genetics (Winter)*

One of:

BIOL 2202 – Cellular and Molecular Biology (Fall)*
BIOL 2203 – Human Anatomy
BIOL 2213 – Principles of Ecology & Evolution

Two of:

BIOL 3103 – Introduction to Biophysics**
BIOL 3107 – Evolution in Health and Disease
BIOL 3108 – Conservation Biology
BIOL 3203 – Genomes
BIOL 3204 – Histology
BIOL 3208 – Molecular & Genomic Revolutions in Biology
BIOL 3216 – Human Physiology & Environmental Stress
BIOL 3301 – Animal Behaviour

*Available for General Science students in the term indicated

**Requires PHYS 1202 as a prerequisite

Chemistry Concentration

CHEM 1201 – General Chemistry I
CHEM 1202 – General Chemistry II
CHEM 2101 – Organic Chemistry I
CHEM 2102 – Organic Chemistry II
CHEM 3201 – Structure Determination

One of:

BCEM 3201 – Protein Biochemistry*
BCEM 3202 – Enzymes & Metabolic Systems*
BCEM 4212 – Biochemical Pharmacology*
CHEM 4103 – Advanced Organic Chemistry: Synthesis

*Requires BCEM 2201 as a prerequisite

Geography Concentration

GEOG 1101 – The Physical Environment

One of:

GEOG 1103 – The Human Environment
GEOG 1105 – Intro to Mapping, GIS & Remote Sensing

One of:

GEOG 2107 – Weather and Climate
GEOG 2111 – Earth's Changing Surface

One of:

GEOG 2445 – Environmental Problems & Resource Mgmt.
GEOG 2553 – Geographic Information Systems

One of:

GEOG 3107 – Conservation Biogeography
GEOG 4440 – Sustainable Development Geography

One of:

GEOG 3445 – Global Environmental Issues
GEOG 3553 – Spatial Analysis and GIS

Geology Concentration

GEOL 1101 – The Dynamic Earth
GEOL 1103 – Earth Through Time
GEOL 2107 – Paleontology
GEOL 2109 – Stratigraphy & Sedimentation
GEOL 3107 – Geomorphology
GEOL 4105 – Hydrogeology

Mathematics Concentration*

MATH 1200 – Calculus for Scientists I
MATH 1203 – Linear Algebra for Scientists & Engineers
MATH 2200 – Calculus for Scientists II
MATH 2234 – Concepts of Mathematical Statistics
MATH 3101 – Numerical Analysis
MATH 3200 – Mathematical Methods

**If selecting Mathematics as a concentration, replace the MATH courses in the above table with four courses from another discipline listed on this page, consult with your Academic Advisor.*

Physics Concentration

PHYS 1201 – Classical Physics I
PHYS 1202 – Classical Physics II
PHYS 2201 – Acoustics, Optics & Radiation
PHYS 2203 – Electromagnetism
PHYS 3601 – Thermodynamics
PHYS 3602 – Elementary Quantum Mechanics

General Science Options

Students must complete six General Science Options (GSOs) to meet graduation requirements in this program.

The General Science Options must include:

- two GSOs at any course level
- two GSOs at the 2000 level or higher
- two GSOs at the 3000 level or higher

A student may choose any course with a *General Science Option attribute* provided they are able to:

- i. access the course: meaning the course is offered in the semester and is not restricted, and,
- ii. the student meets the course prerequisites.

General Science Option attributes can be found using the search function at mymru.ca > Register & Pay > Look Up Courses or Add/Drop/Withdraw, under Attribute

Declaring concentrations: students are encouraged to declare their concentrations by email to studentrecords@mtroyal.ca as soon as possible.

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