

Bachelor of Science - General Science 2024/25

✓	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
	GNEDE Foundation Cluster 1: one of GNEDE 1101 or 1103		GNEDE Foundation Cluster 2: one of GNEDE 1201, 1202, or 1203
	GNEDE Foundation Cluster 4: one of GNEDE 1401, 1403 or 1404		GNEDE Foundation Cluster 3: one of GNEDE 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 2234 - Concepts of Mathematical Statistics
	MATH 1203 - Linear Algebra for Scientists and Engineers
	GNEDE Tier 2 Cluster 2:
	GNEDE 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, ensure you meet prerequisites and graduation requirements. If you require a reduced course load, please consult your advisor for guidance when planning.

YEAR THREE - complete the following courses

✓	CORE requirements:	✓	General Education and Electives:
	Concentration A (3XXX):		GNEDE Tier 2 Cluster 4:
	Concentration A (3XXX):		GNEDE 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:		GNEDE Tier 3 (Cluster___):
	General Science Option:		GNEDE Tier 3 (Cluster___):
	General Science Option:		Elective course:
	General Science Option:		Elective course:
	SCIE 5010 - Senior Student Seminar (Fall)		
	SCIE 5020 - Interdisciplinary Project or SCIE 5030 – Work Integrated Learning (Winter)		

PLEASE READ:

Prerequisites and course descriptions: can be found in the current 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.

General Education: General Education courses, otherwise known as “GNEDE 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 GNEDEs (one from each of cluster 2, 3, and 4), and a total of three tier 3 GNEDEs from at least two clusters, for a total of 10 GNEDE courses.

For more information and a list of GNEDE courses, visit mru.ca/GNEDE and click ‘courses’ on the left-hand navigation.

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

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

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

Biology Concentration

BIOL 1202 – Introduction to Cell Biology
BIOL 1204 – Evolution of Eukaryotes
BIOL 2101 – Genetics

One of:

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

Two of:

BIOL 3103 – Introduction to Biophysics**
BIOL 3107 – Evolution in Health & 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

***Requires PHYS 1201 & PHYS 1202 as prerequisites, can count as GSOs*

Some senior Biology courses are restricted to Biology majors at the beginning of registration; restrictions are usually removed by June 1 for Fall and by Nov 1 for Winter.

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, can count as GSO*

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. Please 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 (GSOs)

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, Attribute: General Science Option

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

Please note: Some senior courses are only offered once per year and seats will be limited. Prerequisites, scheduling, and availability for all courses and prerequisites are subject to changes each semester and year.