

Bachelor of Science - General Science 2022-23

✓	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
	GNEC Foundation Cluster 1: one of GNEC 1101 or 1103		GNEC Foundation Cluster 2: one of GNEC 1201, 1202, or 1203
	GNEC Foundation Cluster 4: one of GNEC 1401, 1403 or 1404		GNEC Foundation Cluster 3: one of GNEC 1301, 1303, or 1304

Concentration courses are listed on page 2.

Many courses are prerequisites for upper year 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 1: Modeling and Simulation - <i>Winter</i>
	MATH 1203 - Linear Algebra for Scientists and Engineers
	MATH 2234 - Concepts of Mathematical Statistics
	GNEC Tier 2 Cluster 2:
	GNEC 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 one semester. 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 are uncertain or require clarification.

YEAR THREE - complete the following courses			
✓	CORE requirements:	✓	General Education and Electives:
	Concentration A (3xxx):		GNEC Tier 2 Cluster 4:
	Concentration A (3xxx):		GNEC 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:		GNEC Tier 3 (Cluster___):
	General Science Option:		GNEC Tier 3 (Cluster___):
	General Science Option:		Elective course:
	General Science Option:		Elective course:
	SCIE 5010 - General Science Senior Student Seminar		
	SCIE 5020 - General Science 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, Physics, Mathematics, Chemistry, Geology, or Geography (more info on page 2).

General Education: General Education approved courses, otherwise known as "GNEC requirements", are designed to give you a well-rounded knowledge base and are organized into 4 thematic clusters. Each Cluster has 3 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 GNECs (one from each of cluster 2, 3, and 4), and a total of three tier 3 GNECs from at least two clusters, for a total of 10 GNEC courses.

For more information and a list of GNEC courses, visit mtroyal.ca/gened and click 'courses' on the left-hand navigation.

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

Electives: an elective is 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.

If selecting Mathematics as a concentration: replace the MATH courses in this table with four courses from a concentration other than A or B.

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

Course offerings in Fall or Winter semesters: to properly plan your courses, semesters and degree program please check with the Departments directly for an indication of when a course is *normally* offered.

Concentrations and General Science Options: 2022-2023 Academic Calendar

Students must choose two concentrations for graduation purposes. If the Mathematics Concentration is chosen as concentration A or B, then the student must take four courses from another concentration.

Biology Concentration

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

One of:

BIOL 2202 – Cell and Molecular Biology
BIOL 2203 – Human Anatomy
BIOL 2213 – Ecology

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 – The Molecular and Genomic Revolutions in Biology
BIOL 3216 – Human Physiology and Adapt. to Environmental Stress
BIOL 3301 – Animal Behaviour

*Restricted in Fall term, available in Winter term

** Requires PHYS 1202 as a prerequisite

Enrollment spaces in senior level Biology courses will be limited

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 and Metabolic Systems *
BCEM 4212 – Biochemical Pharmacology *
CHEM 4103 – Advanced Organic Synthesis

*Requires BCEM 2201 as a prerequisite

Enrollment spaces in senior level Chemistry and Biochem courses will be limited

Geography Concentration

GEOG 1101 – The Physical Environment
GEOG 3107 – Conservation Biogeography

One of:

GEOG 1103 – The Human Environment
GEOG 1105 – Introduction to Mapping, GIS and Remote Sensing

One of:

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

One of:

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

One of:

GEOG 3445 – Global Environmental Issues
GEOG 3553 – Spatial Analysis and Geographic Information Systems

Enrollment spaces in senior level Geography courses will be limited

Geology Concentration

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

Enrollment spaces in senior level Geology courses will be limited

Mathematics Concentration

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

Enrollment spaces in senior level Mathematics courses will be limited

Physics Concentration

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

Enrollment spaces in senior level Physics courses will be limited

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 any course prerequisites listed

The General Science attributes can be found using the advanced search function at mymru.ca.

Declaring concentrations: students are encouraged to declare their concentrations at the Registrar's Office in A101 or by email to studentrecords@mtroyal.ca as soon as possible.