# Bachelor of Science – General Science 2019/20

**Name:** _____________________________  
**Student #:** _______________  
**Admission Year:** _____

## YEAR ONE - FALL
- Concentration A (1xxx)  
- Concentration B (1xxx)  
- MATH 1200 Calculus for Scientists I  
- GNED Foundation Cluster 1  
- GNED Foundation Cluster 4

## YEAR ONE - WINTER
- Concentration A (1xxx)  
- Concentration B (1xxx)  
- MATH 2200 Calculus for Scientists II  
- GNED Foundation Cluster 2  
- GNED Foundation Cluster 3

## YEAR TWO - FALL
- Concentration A (2xxx)  
- Concentration B (2xxx)  
- COMP 2001 Introduction to Computer-Based Problem Solving for the Sciences  
- MATH 1203 Linear Algebra for Scientists and Engineers  
- GNED Tier 2 Cluster 2

## YEAR TWO - WINTER
- Concentration A (2xxx)  
- Concentration B (2xxx)  
- COMP 2008 Scientific Computing 1: Modeling and Simulation  
- MATH 2234 Concepts of Mathematical Statistics  
- GNED Tier 2 Cluster 3

## YEAR THREE - FALL
- Concentration A (3xxx)  
- Concentration B (3xxx)  
- General Science Option  
- General Science Option  
- GNED Tier 2 Cluster 4

## YEAR THREE - WINTER
- Concentration A (3xxx)  
- Concentration B (3xxx)  
- General Science Option  
- General Science Option  
- GNED Tier 3

## YEAR FOUR - FALL
- SCIE 5010 General Science Senior Student Seminar  
- General Science Option  
- GNED Tier 3  
- Elective  
- Elective

## YEAR FOUR - WINTER
- SCIE 5020 General Science Interdisciplinary Project  
- General Science Option  
- GNED Tier 3  
- Elective  
- Elective

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This document is only intended to be a guide for students and should be used together with the Mount Royal University Academic Calendar which states academic policies and degree requirements. Be sure to consult with your Academic Advisor to confirm graduation requirements or if you have any questions.

### PLEASE READ:

**Major:** Choose 2 concentrations for graduation from Biology, Physics, Math, Chemistry, Geology, or Geography (more info on 2nd page)

**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 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 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 mtroyal.ca/gened/courses for more information and a list of GNED courses.

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

**Electives:** an elective is 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.

**Note:** MATH may be chosen as one of Concentration A or B; if so then replace the MATH courses in this table with 4 General Science Options from a discipline different from A or B.

**General Science Options:** a listing of courses offered as GSO (General Science Options) is on the second page of this document. Please see your Science Advisor for more information on this requirement.

**Prerequisites & Course descriptions:** can be found in the Academic Calendar or by visiting: mtroyal.ca/ProgramsCourses/CourseListings

Courses may only be offered in the 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: 2017-2018 Academic Calendar

Students must choose 2 concentrations to follow for graduation.

If the Mathematics Concentration is chosen as 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

One of:
- BIOL 2202 - Cell and Molecular Biology
- BIOL 2203 - Human Anatomy
- BIOL 2213 - Ecology

Two of:
- BIOL 3107 - Evolution in Health and Disease
- BIOL 3108 - Conservation Biology
- BIOL 3203 - Genomes
- BIOL 3204 - Histology
- BIOL 3301 - Animal Behaviour

*restricted in Fall term, available in Winter term only

#### Chemistry Concentration
- CHEM 1201 - General Chemistry I
- CHEM 1202 - General Chemistry II
- CHEM 2101 - Organic Chemistry I
- CHEM 2102 - Organic Chemistry II
- CHEM 3103 - Advanced Organic Synthesis
- CHEM 3201 - Spectroscopy

#### Geography Concentration
- GEOG 1101 - The Physical Environment
- GEOG 1103 - The Human Environment OR GEOG 1105 - Introduction to Mapping, GIS and Remote Sensing
- GEOG 2107 - Weather and Climate OR GEOG 2111 - Earth's Changing Surface
- GEOG 2445 - Environmental Problems and Resource Management OR GEOG 2553 - Geographic Information Systems
- GEOG 3107 - Conservation Biogeography
- GEOG 3445 Global Environmental Issues OR GEOG 3553 Spatial Analysis and Geographic Information Systems

#### *Geology Concentration*
- GEOL 1101 – Physical Geology
- GEOL 1103 – Historical Geology
- GEOL 2107 – Paleontology
- GEOL 2109 – Stratigraphy and Sedimentation
- GEOL 3107 – Geomorphology
- GEOL 4105 – Hydrogeology

*NOTE: 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

#### 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

#### General Science Options (GSO)

A student may choose any of the courses above (from a concentration they did not choose) as a GSO. Alternatively, they may choose from any of the following supplemental courses:

- ASTR 2105 – Astrobiology
- BCEM 2201 - General Biochemistry
- BCEM 3202 - Enzymes and Metabolic Systems
- BCEM 4212 - Biochemical Pharmacology
- CHEM 3802 - Science and Politics of Nuclear Energy
- COMP 1502 - Programming II: Object Oriented Programming
- COMP 2511 - Web 1: Client Development
- COMP 2503 - Programming III: Database Structures
- COMP 2521 - Database 1: Data Modeling and Query Languages
- COMP 2531 - Computer Architecture and Operating Systems
- COMP 3012 - Robotics
- COMP 3532 - Systems Administration and Maintenance
- COMP 3533 - Network Infrastructure and Security
- COMP 3553 - Human Computer Interaction
- GEOG 2437 - Biogeography
- GEOG 3447 - Parks and Protected Areas
- GEOL 2151 – Environmental Geology and Earth Resources
- GEOL 2153 – Natural Hazards and Disasters
- GEOL 2155 – History of Life
- GEOL 2157 – Water; Geologic and Geographic Issues
- MATH 2101 - Abstract Algebra
- MATH 2311 - Linear Algebra II
- PHYS 3103 - Introduction to Biophysics

**please declare your concentrations at the Registrar’s Office in A101 asap**

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