

## Bachelor of Science – Chemistry, concentration in Analytical Biochemistry 2023/24

✓ YEAR ONE - Fall	✓ YEAR ONE - Winter
MATH 1200 - Calculus for Scientists I	BIOL 1202 - Introduction to Cell Biology
CHEM 1201 - General Chemistry - Structure and Bonding	CHEM 1202 - General Chemistry - Introduction to Quantitative Chemistry
PHYS 1201 - Classical Physics I	PHYS 1202 - Classical Physics II
GNED Foundation Cluster 1: one of GNED 1101 or 1103	MATH 2200 - Calculus for Scientists II
GNED Foundation Cluster 4: one of GNED 1401, 1403 or 1404	GNED Foundation Cluster 2: one of GNED 1201, 1202, or 1203

Many courses are prerequisites for upper year courses. Check prerequisites at <http://catalog.mtroyal.ca/>

✓ YEAR TWO - complete the following courses*
CHEM 2101 - Organic Chemistry I - <i>Fall</i>
CHEM 2301 - Analytical Chemistry I - <i>Fall</i>
COMP 2001- Programming for the Sciences - <i>Fall</i>
BIOL 1204 - The Evolution of Eukaryotes - <i>Fall</i>
CHEM 2102 - Organic Chemistry II - <i>Winter</i>
CHEM 2302 - Analytical Chemistry II – <i>Winter</i> (Community Service Learning/CSL course)
BCEM 2201 - General Biochemistry - <i>Winter</i>
BIOL 2101 - Genetics - <i>Winter</i>
GNED Foundation Cluster 3: one of GNED 1301, 1303 or 1304
GNED Tier 2 Cluster 2:

\*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 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 are uncertain or require clarification.

**\*\*WARNING: delaying 2<sup>nd</sup> year core courses can result in scheduling conflicts with senior courses, delaying graduation by at least one semester, often one year**

YEAR THREE - complete the following courses	
✓ CORE Requirements:	✓ General Education and Electives:
CHEM 2401 - Inorganic Chemistry	GNED Tier 2 Cluster 3:
CHEM 2601 - Physical Chemistry	GNED Tier 2 Cluster 4:
CHEM 3200 - Research Methods in Chemistry (CSL course)	Elective course:
CHEM 3601 - Thermodynamics	
BCEM 3201 - Protein Biochemistry	
BCEM 3202 - Enzymes and Metabolic Systems	
BIOL 2202 - Cellular and Molecular Biology	

As you plan your courses be sure you are checking prerequisites at <http://catalog.mtroyal.ca/>

**\*\*WARNING: delaying 2<sup>nd</sup> year core courses can result in scheduling conflicts with senior courses, delaying graduation by at least one semester, often one year**

YEAR FOUR - complete the following courses	
✓ CORE Requirements:	✓ General Education and Electives:
CHEM 4301 - Advanced Analytical Chemistry	GNED Tier 3 (Cluster ____):
BCEM 4201 - Lipids and Membranes	GNED Tier 3 (Cluster ____):
BCEM 4210 - Topics in Structural Biology	GNED Tier 3 (Cluster ____):
BCEM 5200 - Analytical Biochemistry in a Community Context (CSL course)	Elective course:
	Elective course:
	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/>

**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. For more information and a list of GNED courses, visit [mru.ca/gned](http://mru.ca/gned) 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 limits.

**Advising Plan:** Students are strongly advised to follow the progression of classes and course load indicated. Deviation from the recommended course pattern may result in scheduling conflicts.

**Community Service Learning:** three CSL courses are needed to receive this citation on your transcript, learn more here: [mru.ca/csl](http://mru.ca/csl)

**Declaring concentrations:** declare the Analytical Biochemistry concentration by email to [studentrecords@mtroyal.ca](mailto:studentrecords@mtroyal.ca)