

# CHEMISTRY (CHEM)

Updated April 24, 2024

**Chair:** Professor J. Hollett; **Professors:** D. Craig, D. Goltz, C. Wiebe; **Associate Professors:** M. Eze, J. Hollett, A. McCubbin, J. Ritch, D. Vanderwel, T. Wood; **Instructors:** K. Buffie, J. Galka, D. Latimer, K. Stevenson

## DEGREES/PROGRAMS OFFERED

3-Year BSc

3-Year BSc (Business Stream)

4-Year BSc

4-Year BSc (Business Stream)

Honours BSc

Honours BSc (Business Stream)

4-Year BSc (UW/RRC Polytech) - **NOTE:** This program is being discontinued. No new students will be admitted.

## INTRODUCTION

Chemistry is the study of the property and composition of matter, the transformations that matter may undergo, and the energies associated with such

## REQUIREMENTS FOR THE 3-YEAR BSc IN CHEMISTRY

<b>ADMISSION REQUIREMENT</b>	Students must consult with a department advisor in planning their course of study.
<b>GRADUATION REQUIREMENT</b>	90 credit hours
<b>RESIDENCE REQUIREMENT</b>	
Degree:	Minimum 30 credit hours
Major:	Minimum 18 credit hours
<b>GENERAL DEGREE REQUIREMENT</b>	

Major: Minimum 30 credit hours

### GENERAL DEGREE REQUIREMENT

Humanities: 12 credit hours in Humanities.  
Writing: Minimum 3 credit hours of Academic Writing.  
Indigenous: 3 credit hours in designated Indigenous requirement courses  
Maximum Introductory Courses: Students may use a maximum of 42 credit hours at the 1000 level. Of these, a maximum of 6 credit hours may be below the 1000 level. As a result, students must take a minimum of 78 credit hours at the 2000-level or above in order to not exceed the maximum number of introductory courses.  
Distribution: Minimum three (3) credit hours from each of five (5) different subjects.

### MAJOR REQUIREMENT

Single Major: Minimum 54 credit hours/Maximum 78 credit hours in the Major subject.  
Maximum total of cognate and major courses is 84 credit hours combined.  
Double Major: Minimum 54 credit hours in Chemistry and specified number of credit hours in other Major.

Required courses:

<b>CHEM-1111(3)</b> Introduction to the Chemical Properties of Matter	<b>CHEM-2502(3)</b> Introduction to Biochemistry <b>OR CHEM-3502(3)</b> Intermediate Biochemistry I
<b>CHEM-1112(3)</b> Basic Principles of Chemical Reactivity	<b>CHEM-3302(3)</b> Methods of Chemical Analysis
<b>CHEM-2102(3)</b> Thermodynamics and Kinetics	<b>CHEM-3401(3)</b> Inorganic Chemistry II: Coordination Chemistry
<b>CHEM-2103(3)</b> Atoms, Molecules and Spectroscopy	<b>MATH-1101(6)</b> Introduction to Calculus
<b>CHEM-2202(3)</b> Organic Chemistry I	<b>OR MATH-1103(3)</b> Introduction to Calculus I
<b>CHEM-2203(3)</b> Organic Chemistry II	<b>AND MATH-1104(3)</b> Introduction to Calculus II
<b>CHEM-2302(3)</b> Quantitative Chemical Analysis	<b>PHYS-1101(6)</b> Foundations of Physics I
<b>CHEM-2401(3)</b> Inorganic Chemistry I	<b>OR PHYS-1301(6)</b> Introduction to Physics

Minimum 3 credit hours selected from the following courses:

**PSYC-2101(3)** Introduction to Data Analysis  
**STAT-1301(3)** Statistical Analysis I (or the former **STAT-1201(6)** Intro to Stat Analysis)  
**STAT-1501(3)** Elementary Biological Statistics I  
Any Mathematics course numbered 2000 or above (MATH-2xxx) with the exceptions of MATH-2901(3) (History of Calculus) MATH-2902 (Math Prior to 1640), MATH-2905 (MATH/PHIL-2305 Philosophy and Mathematics) and MATH-2801(6) (Fundamentals of Computing), MATH-2903 Math for Early/Middle Year Teachers I.

Plus an additional 21 credit hours of 2000-, 3000- and/or 4000-level Chemistry courses.

Selection of Chemistry Courses: The 4-Year major requires a minimum of 54 credit hours in Chemistry. Since some senior courses are given in alternate years, all 4-Year majors are urged to seek academic advising within the Department **EACH YEAR** to avoid potential scheduling problems.

The following pattern of Chemistry courses is suggested:

**Year 1** - 6 credit hours: **CHEM-1111(3)** Introduction to the Chemical Properties of Matter; **CHEM-1112(3)** Basic Principles of Chemical Reactivity.

**Year 2** - 12 to 18 credit hours of the following required courses: **CHEM-2102(3)** Thermodynamics and Kinetics; **CHEM-2103(3)** Atoms, Molecules and Spec

3 credit hours from CHEM-3101(3) Physical Chemistry of Condensed Phases, CHEM-3102(3) Quantum Chemistry and Spectroscopy

**BIOL-2301(3)** Genetics  
**BIOL-3303(3)**

Required Courses:

## COURSE LISTINGS

Students should consult Web Advisor or the appropriate Timetable on the website for courses to be offered in the upcoming term. **A number of senior courses are offered on a rotation basis and are given in alternate years.** Students are advised to consult with the Department **in advance** when planning their curriculum.

<b>CHEM-0100(3)</b>	Foundations of Chemistry	<b>CHEM-3206(3)</b>	Advanced Organic Chemistry Laboratory
<b>CHEM-1111(3)</b>	Introduction to the Chemical Properties of Matter	<b>CHEM-3302(3)</b>	Methods of Chemical Analysis
<b>CHEM-1112(3)</b>	Basic Principles of Chemical Reactivity	<b>CHEM-3401(3)</b>	Inorganic Chemistry II: Coordination Chemistry
<b>CHEM-2102(3)</b>	Thermodynamics and Kinetics	<b>CHEM-3502(3)</b>	Intermediate Biochemistry I: Structure, Function, and Energetics of Biomolecules
<b>CHEM-2103(3)</b>	Atoms, Molecules and Spectroscopy	<b>CHEM-3503(3)</b>	Intermediate Biochemistry II: Intermediary Metabolism
<b>CHEM-2202(3)</b>	Organic Chemistry I	<b>CHEM-3601(3)</b>	Environmental Chemistry
<b>CHEM-2203(3)</b>	Organic Chemistry II	<b>CHEM/ENV-361( )</b>	<del>ENV-361( )</del> Td( )Tj-0.004 Tc naEM
<b>CHEM-2302(3)</b>	Quantitative Chemical Analysis		
<b>CHEM-2401(3)</b>	Inorganic Chemistry I		
<b>CHEM-2502(3)</b>	Introduction to Biochemistry		
<b>CHEM-2701(3)</b>	Computer Techniques and Applications for Chemistry		
<b>CHEM-2801(3)</b>	Environmental Issues: A Chemistry Perspective		
<b>CHEM-3101(3)</b>	Physical Chemistry of Condensed Phases		
<b>CHEM-3102(3)</b>	Quantum Chemistry and Spectroscopy		
<b>CHEM-3202(3)</b>	Reaction Mechanisms in Organic Chemistry		
<b>CHEM-3204(3)</b>	Organic Structure Determination		
<b>CHEM-3205(3)</b>	Organic Synthesis		