# 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**

ADMISSION REQUIREMENT Students must consult with a department advisor in planning their course of study.

**GRADUATION REQUIREMENT** 90 credit hours

RESIDENCE REQUIREMENT

Degree: Minimum 30 credit hours Major: Minimum 18 credit hours

**GENERAL DEGREE REQUIREMENT** 

Major: Minimum 30 credit hours

#### **GENERAL DEGREE REQUIREMENT**

12 credit hours in Humanities. Humanities:

Writing: Minimum 3 credit hours of Academic Writing.

3 credit hours in designated Indigenous requirement courses Indigenous:

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:

CHEM-2502(3) Introduction to Biochemistry CHEM-1111(3) Introduction to the Chemical Properties of Matter OR CHEM-3502(3) Intermediate Biochemistry I CHEM-1112(3) Basic Principles of Chemical Reactivity CHEM-3302(3) Methods of Chemical Analysis CHEM-2102(3) Thermodynamics and Kinetics CHEM-3401(3) Inorganic Chemistry II: Coordination CHEM-2103(3) Atoms, Molecules and Spectroscopy Chemistry

Organic Chemistry I CHEM-2202(3) CHEM-2203(3) Organic Chemistry II

CHEM-2302(3) Quantitative Chemical Analysis

CHEM-2401(3) Inorganic Chemistry I

Introduction to Calculus MATH-1101(6) OR MATH-1103(3) Introduction to Calculus I AND MATH-1104(3) Introduction to Calculus II

PHYS-1101(6) Foundations of Physics I OR PHYS-1301(6) 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) MÁTH-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.

The 4-Year major requires a minimum of 54 credit hours in Chemistry. Since some senior Selection of Chemistry Courses:

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. <u>A number of senior courses are offered on a rotation basis and are given in alternate years.</u> Students are advised to consult with the Department <u>in advance</u> when planning their curriculum.

CHEM-0100(3) CHEM-1111(3)	Foundations of Chemistry Introduction to the Chemical Properties of Matter	CHEM-3206(3) CHEM-3302(3) CHEM-3401(3)	Advanced Organic Chemistry Laboratory Methods of Chemical Analysis Inorganic Chemistry II: Coordination
CHEM-1112(3)	Basic Principles of Chemical Reactivity	• •	Chemistry
CHEM-2102(3)	Thermodynamics and Kinetics	CHEM-3502(3)	Intermediate Biochemistry I: Structure,
CHEM-2103(3)	Atoms, Molecules and Spectroscopy		Function, and Energetics of Biomolecules
CHEM-2202(3)	Organic Chemistry I	CHEM-3503(3)	Intermediate Biochemistry II: Intermediary
CHEM-2203(3)	Organic Chemistry II		Metabolism
CHEM-2302(3)	Quantitative Chemical Analysis	CHEM-3601(3)	Environmental Chemistry
CHEM-2401(3)	Inorganic Chemistry I	CHEM/ENV-361	()Tj\$3 <b>927</b> 30-Td()Tj-0.004 Tc naEM
CHEM-2502(3)	Introduction to Biochemistry		
CHEM-2701(3)	Computer Techniques and Applications for		
	Chemistry		
CHEM-2801(3)	Environmental Issues: A Chemistry		
	Perspective		
CHEM-3101(3)	Physical Chemistry of Condensed Phases		
CHEM-3102(3)	Quantum Chemistry and Spectroscopy		
CHEM-3202(3)	Reaction Mechanisms in Organic		
	Chemistry		
CHEM-3204(3)	Organic Structure Determination		
CHEM-3205(3)	Organic Synthesis		