

HONOURS BSC CHEMISTRY - OPTION ADVANCED MATERIALS

Chemistry is a modern, dynamic and diverse field that involves investigating the substances that make up our physical world and how they change. Chemistry touches everything we come into contact with. It is connected to almost all areas of science and engineering. For example, chemists play a vital role in developing new drugs, understanding and modifying biological processes and making materials for advanced electronic devices. Chemists are also important players in such diverse areas as genetic engineering, forensic science and the oil and gas industry. More recently, chemists have been at the forefront of nanotechnology and emerging green technologies, particularly in the development of sustainable energy sources.

The Department of Chemistry and Biomolecular Sciences at the Faculty of Science offers chemistry, biochemistry and biopharmaceutical science programs with unique options in medicinal chemistry, genomics, advanced materials chemistry, ecochemistry and chemical biology. In addition to classroom teaching, programs offer practical laboratory training with a focus on individual instruction.

This program is offered in English and in French.

Program Requirements

Co-operative education is available with this program.

The French immersion stream is available with this program.

Requirements for this program have been modified. Please consult the 2018-2019 calendars (<https://catalogue.uottawa.ca/en/archives/>) for the previous requirements.

CHM 1311	Principles of Chemistry	3 Units
CHM 1321	Organic Chemistry I	3 Units
GEO 1115	Introduction to Earth Materials	3 Units
MAT 1320	Calculus I	3 Units
MAT 1322	Calculus II	3 Units
One option from the following:		6 Units
Option 1:		
PHY 1121	Fundamentals of Physics I	
PHY 1122	Fundamentals of Physics II	
Option 2:		
PHY 1321	Principles of Physics I	
PHY 1322	Principles of Physics II	
CHM 2120	Organic Chemistry II	3 Units
CHM 2123	Laboratory of Organic Chemistry II	3 Units
CHM 2128	Synthesis and Characterization of Advanced Materials	3 Units
CHM 2131	Chemical Thermodynamics of Gases and Solutions	3 Units
CHM 2330	Physical Chemistry: Introduction to the Molecular Properties of Matter	3 Units
CHM 2353	Descriptive Inorganic Chemistry	3 Units
CHM 2354	Analytical Chemistry	3 Units

CHM 3120	Intermediate Organic Chemistry	3 Units
CHM 3122	Applications of Spectroscopy in Chemistry	3 Units
CHM 3140	Quantum Chemistry and Molecular Modelling	3 Units
CHM 3350	Transition Metal Chemistry	3 Units
CHM 3373	Molecular Spectroscopy and Statistical Mechanics	3 Units
CHM 4318	Nanostructured Materials	3 Units
CHM 4354	Principles of Instrumental Analysis	3 Units
CHM 4380	Advanced Characterization Methods in Material Science and Catalysis	3 Units
CHM 4118	Advanced Materials Laboratory	3 Units
One option from the following:		9 Units

Option 1: Honours Project

CHM 4010 Research Project ¹

Option 2: Honours Project Co-op Option

CHM 4016 Research Project

and 3 optional course units in chemistry (CHM) at the 3000 or 4000 level

6 optional course units from: 6 Units

CHM 3126 Laboratory of Organic Chemistry

CHM 4123 Medicinal Chemistry

CHM 4141 Computational Chemistry I

CHM 4143 Computational Chemistry II

CHM 4155 Polymer and Applied Chemistry

CHM 4182 Molecular Dynamics in Chemistry

CHM 4311 Selected Topics in Inorganic Chemistry

CHM 4313 Solid State Chemistry

CHM 4317 Organometallic Chemistry

CHM 4325 Advanced Organic Synthesis and Reaction Mechanisms

CHM 4340 Application of Theoretical Chemistry

CHM 4381 Photochemistry and Photobiology

6 optional course units from the list of optional courses 6 Units
below

12 elective course units offered by the Faculty of Arts, the Faculty of Education, the Faculty of Law, the Faculty of Social Sciences or the Telfer School of Management 12 Units

18 elective course units ² 18 Units

Total: **120 Units**

Note(s)

1

A project related to Advances Materials is strongly recommended.

2

Although the program is well suited for future graduate work, for students intending to pursue graduate studies in chemistry, it is highly recommended to take 6 of their elective course units from the list of chemistry (CHM) courses in their area of interest at the 4000 level.

List of Optional Courses

BCH 2333	Introduction to Biochemistry	3 Units
CHM 3126	Laboratory of Organic Chemistry	3 Units
CHM 4123	Medicinal Chemistry	3 Units
CHM 4141	Computational Chemistry I	3 Units

This is a copy of the 2024-2025 catalog.

CHM 4143	Computational Chemistry II	3 Units
CHM 4155	Polymer and Applied Chemistry	3 Units
CHM 4182	Molecular Dynamics in Chemistry	3 Units
CHM 4311	Selected Topics in Inorganic Chemistry	3 Units
CHM 4313	Solid State Chemistry	3 Units
CHM 4317	Organometallic Chemistry	3 Units
CHM 4325	Advanced Organic Synthesis and Reaction Mechanisms	3 Units
CHM 4340	Application of Theoretical Chemistry	3 Units
CHM 4381	Photochemistry and Photobiology	3 Units
GEO 2163	Introduction to Mineralogy	3 Units
GEO 3167	Mineral Deposits	3 Units
MAT 1341	Introduction to Linear Algebra	3 Units
PHY 2100	Fundamentals of Applied Physics III ¹	3 Units
PHY 2323	Electricity and Magnetism ¹	3 Units
PHY 2361	Modern Physics	3 Units
PHY 3350	Thermodynamics	3 Units
PHY 4382	Introduction to Solid State Physics	3 Units
PHY 4387	Physics of Materials	3 Units

¹

No more than 3 course units from PHY 2100, PHY 2323.