

# HONOURS BSC CHEMISTRY

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 2022-2023 calendars (<http://www.uottawa.ca/academic/info/register/1516/calendars/>) for the previous requirements.

### Compulsory Courses at the 1000 level

CHM 1311	Principles of Chemistry	3 Units
CHM 1321	Organic Chemistry I	3 Units
MAT 1320	Calculus I	3 Units
MAT 1322	Calculus II	3 Units
MAT 1341	Introduction to Linear Algebra	3 Units
PHY 1121	Fundamentals of Physics I	3 Units
PHY 1122	Fundamentals of Physics II	3 Units

### Compulsory Courses at the 2000 level

BCH 2333	Introduction to Biochemistry	3 Units
CHM 2120	Organic Chemistry II	3 Units
CHM 2123	Laboratory of Organic Chemistry II	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
PHY 2100	Fundamentals of Applied Physics III	3 Units

### Compulsory Courses at the 3000 level

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

### Compulsory Courses at the 4000 level

CHM 4354	Principles of Instrumental Analysis	3 Units
One option from the following:		9 Units

#### Option 1: Honours Project

CHM 4010 Research Project

#### 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

### Optional Courses

3 course units from: 3 Units

CHM 3126 Laboratory of Organic Chemistry

CHM 3127 Laboratory of Organic Chemistry – Research Option

3 course units from Physical-Theoretical: 3 Units

CHM 4141 Computational Chemistry I

CHM 4143 Computational Chemistry II

CHM 4182 Molecular Dynamics in Chemistry

CHM 4340 Application of Theoretical Chemistry

CHM 4380 Advanced Characterization Methods in Material Science and Catalysis

CHM 4381 Photochemistry and Photobiology

CHM 4390 Special Topics in Physical Chemistry

CHM 4391 Selected Topics in Physical Chemistry

3 course units from Organic - Bio-organic: 3 Units

BIM 4316 Modern Bioanalytical Chemistry

CHM 4120 Advanced Organic Chemistry

CHM 4123 Medicinal Chemistry

CHM 4139 Enzyme Chemistry and Biocatalysis

CHM 4155 Polymer and Applied Chemistry

CHM 4325 Advanced Organic Synthesis and Reaction Mechanisms

CHM 4328 Special Topics in Organic Chemistry

BPS 4129 Advanced Chemical Biology

3 course units from Inorganic - Materials: 3 Units

CHM 4129 Chemistry of Sustainable Energy

CHM 4311 Selected Topics in Inorganic Chemistry

CHM 4313 Solid State Chemistry

CHM 4317 Organometallic Chemistry

CHM 4318 Nanostructured Materials

CHM 4319 Bio-Inorganic Chemistry

3 optional course units in chemistry (CHM) at the 2000, 3000 or 4000 level 3 Units

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

### Elective Courses

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 18 Units

**Total: 120 Units**