HONOURS BSC IN 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 extended French stream is available with this program.

Requirements for this program have been modified. Please consult the 2015-2016 calendars (http://www.uottawa.caacademic/info/regist/1516/calendars) 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

One option from the following: 9 Units

Option 1: Honours Project
CHM 4010 Research Project and Seminar

Option 2: Honours Project Co-op Option
CHM 4016 Research Project and Seminar 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 units course units from the list of optional courses below 6 Units
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 1 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
CHM 4143 Computational Chemistry II 3 Units
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>CHM 4155</td>
<td>Polymer and Applied Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHM 4182</td>
<td>Molecular Dynamics in Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHM 4311</td>
<td>Selected Topics in Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHM 4313</td>
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<td>Advanced Organic Synthesis and Reaction Mechanisms</td>
<td>3</td>
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<tr>
<td>CHM 4340</td>
<td>Application of Theoretical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHM 4381</td>
<td>Photochemistry and Photobiology</td>
<td>3</td>
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<tr>
<td>GEO 2164</td>
<td>Analytical Methods in Mineralogy</td>
<td>3</td>
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<tr>
<td>GEO 3167</td>
<td>Mineral Deposits</td>
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<tr>
<td>MAT 1341</td>
<td>Introduction to Linear Algebra</td>
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<tr>
<td>PHY 2100</td>
<td>Fundamentals of Applied Physics III</td>
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<tr>
<td></td>
<td>or PHY 2323 Electricity and Magnetism</td>
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<tr>
<td>PHY 2361</td>
<td>Modern Physics</td>
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<td>PHY 3350</td>
<td>Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>PHY 4382</td>
<td>Introduction to Solid State Physics</td>
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<tr>
<td>PHY 4387</td>
<td>Physics of Materials</td>
<td>3</td>
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1 No more than 3 course units from PHY 2100, PHY 2323

This message is intended for students registered in the Faculty of Science. If the components of your program of study require common compulsory courses, you will have to replace the units as follows:

1. 1000-level courses must be replaced with elective course units;
2. 2000-level courses and above must be replaced with optional course units from either discipline at the same level or above.

Please note that all programs in the Faculty of Science require a minimum of 12 elective course units from the Faculty of Arts, the Faculty of Education, the Faculty of Law, the Faculty of Social Sciences or the Telfer School of Management. Once you have decided on the replacement courses, please inform the Office of Undergraduate Programs of the Faculty of Science by email at infosci@uOttawa.ca so that we may amend your Academic Advisement accordingly.