HONOURS BSC IN BIOLOGY - PHYSIOLOGY OPTION

Recent discoveries and new technologies are revolutionizing the biological sciences, placing increasing emphasis on integrating knowledge across all levels of organization, from molecules to ecosystems. Our programs give students both the intellectual tools and the hands-on experience they need to pursue careers in fields as diverse as conservation and endangered species; land-use management; ecotoxicology; academic, industry or government research; or health care. Learning takes place through traditional classroom instruction, innovative laboratory projects with state-of-the-art technologies, field-based courses around the world, and a strong research program in which undergraduate students of all years are intensively mentored in a research lab.

The honours program in biology allows for in-depth study in one or more biological disciplines. Students can concentrate on a particular area by choosing one of three options: Cellular and Molecular Biology, Physiology, or Ecology. Evolution and Behaviour. This route includes a compulsory independent research project to equip students with advanced research, analysis and communication skills applicable to diverse careers. Alternatively, they can pursue diverse interests by selecting a general course of study that includes a number of advanced courses, and they can gain work experience while studying through the Co-operative Education Programs.

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 2020-2021 calendars (http://catalogue.uottawa.ca/en/archives/) for the previous requirements.

3 optional course units in English (ENG) at the 1000 or 2000 level

BIO 1130 Introduction to Organismaal Biology 3 Units
BIO 1140 Introduction to Cell Biology 3 Units
CHM 1311 Principles of Chemistry 3 Units
CHM 1321 Organic Chemistry I 3 Units
GEO 1111 Introduction to Earth Systems 3 Units
MAT 1330 Calculus for the Life Sciences I 3 Units
MAT 1332 Calculus for the Life Sciences II 3 Units
PHY 1321 Principles of Physics I 3 Units
BCH 2333 Introduction to Biochemistry 3 Units
BIO 2129 Ecology 3 Units
BIO 2133 Genetics 3 Units
BIO 2135 Animal Form and Function 3 Units
BIO 2137 Introduction to Plant Science 3 Units
CHM 2120 Organic Chemistry II 3 Units
MAT 2379 Introduction to Biostatistics 3 Units
BIO 4920 Seminar I Evaluating Science 1.5 Units

BIO 4921 Seminar II Developing and Communicating Science 1.5 Units

Physiology Option - Block A
BIO 4009 Honours Research 9 Units

Physiology Option - Block B

One option from the following: 18 Units

Option 1: Animal Physiology
BIO 3137 Experiments in Animal Physiology 6 course units from:
BIO 3302 Animal Physiology II
BIO 3303 Animal Physiology I
BIO 3305 Cellular Physiology
and 9 optional course units in biology (BIO), biopharmaceutical science (BPS) or environmental science (EVS), ITI 1120, BCH 3120, BCH 3125, BCH 3356, BCH 4122, BCH 4125, BCH 4188, SCI 3101 with at least 3 of the 9 optional course units at the 3000 or 4000 level 1

Option 2: Plant Physiology
6 course units from:
BIO 3140 Plant Physiology and Biochemistry
BIO 3142 Plant Developmental Biology
BIO 3146 Ecophysiology of Plants and 12 optional course units in biology (BIO), biopharmaceutical science (BPS) or environmental science (EVS), ITI 1120, BCH 3120, BCH 3125, BCH 3356, BCH 4122, BCH 4125, BCH 4188, SCI 3101 with at least 3 of the 12 optional course units at the 3000 or 4000 level 1

Physiology Option - Block C
3 course units from: 3 Units
BIO 3147 Animal Developmental Biology
BIO 3152 Cell Biology Laboratory
BIO 3153 Cell Biology
BIO 3170 Molecular Biology

Physiology Option - Block D
6 course units from: 6 Units
BCH 3120 General Intermediary Metabolism
BIO 3140 Plant Physiology and Biochemistry
BIO 3142 Plant Developmental Biology
BIO 3146 Ecophysiology of Plants
BIO 3302 Animal Physiology II
BIO 3303 Animal Physiology I
BIO 3305 Cellular Physiology
BIO 3310 Plant Systematics and Diversity
BIO 3350 Principles of Neurobiology
BIO 3360 Computational Tools for Biological Sciences
BIO 4119 Topics in Respiratory Physiology
BIO 4120 Animal Adaptations
BIO 4127 Comparative Endocrinology
BIO 4142 Plant Immunity and Symbioses
BIO 4144 Plant Biochemistry and Molecular Biology
BIO 4152 Animal Energetics
BIO 4158 Applied Biostatistics
BIO 4175 Membrane Physiology

BIO 4302  Comparative Biomechanics
BIO 4351  Neural Basis of Animal Behaviour
BIO 4551  Physiologie évolutif et éco-physiologie
BPS 3102  Principles of Toxicology and Pharmacology
BPS 4123  Phytomedicines and Natural Product Drugs
CMM 4360  The Dynamical Brain: Experimental and Computational Approaches to Neural Networks

9 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  9 Units

24 elective course units  24 Units

Total:  120 Units

Note(s)

1. Within your program of study, you must complete a minimum of 15 course units at the 3000 or 4000 level with a laboratory component. A complete list of courses having a laboratory component can be found below. Please note: if a course listed below has already been used to fulfill a compulsory or optional requirement in your program listed above, these course units count towards this total of 15 units.

List of Optional Courses

List of Optional Courses with a Laboratory Component

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>BIM 4316</td>
<td>Modern Bioanalytical Chemistry</td>
<td>3 Units</td>
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<tr>
<td>BIO 3103</td>
<td>Field Biology</td>
<td>3 Units</td>
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<tr>
<td>BIO 3126</td>
<td>General Microbiology Laboratory</td>
<td>3 Units</td>
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<tr>
<td>BIO 3137</td>
<td>Experiments in Animal Physiology</td>
<td>3 Units</td>
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<tr>
<td>BIO 3146</td>
<td>Ecophysiology of Plants</td>
<td>3 Units</td>
</tr>
<tr>
<td>BIO 3151</td>
<td>Molecular Biology Laboratory</td>
<td>3 Units</td>
</tr>
<tr>
<td>BIO 3152</td>
<td>Cell Biology Laboratory</td>
<td>3 Units</td>
</tr>
<tr>
<td>BIO 3154</td>
<td>Population and Community Ecology</td>
<td>3 Units</td>
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<tr>
<td>BIO 3158</td>
<td>Vertebrate Zoology</td>
<td>3 Units</td>
</tr>
<tr>
<td>BIO 3310</td>
<td>Plant Systematics and Diversity</td>
<td>3 Units</td>
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<tr>
<td>BIO 3333</td>
<td>Entomology</td>
<td>3 Units</td>
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<tr>
<td>BIO 3360</td>
<td>Computational Tools for Biological Sciences</td>
<td>3 Units</td>
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<tr>
<td>BIO 3924</td>
<td>Biology of Algae and Fungi</td>
<td>3 Units</td>
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<tr>
<td>BIO 4004</td>
<td>Honours Research</td>
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<td>BIO 4009</td>
<td>Honours Research</td>
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<tr>
<td>BIO 4122</td>
<td>Experiments in Animal Behaviour</td>
<td>3 Units</td>
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<tr>
<td>BIO 4150</td>
<td>Spatial Ecology</td>
<td>3 Units</td>
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<tr>
<td>BIO 4156</td>
<td>Freshwater Ecology</td>
<td>3 Units</td>
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<tr>
<td>BIO 4158</td>
<td>Applied Biostatistics</td>
<td>3 Units</td>
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<tr>
<td>BPS 4104</td>
<td>Bioinformatics Laboratory</td>
<td>3 Units</td>
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<tr>
<td>BPS 4127</td>
<td>Advanced Techniques in Biosciences</td>
<td>3 Units</td>
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