HONOURS BSC IN BIOLOGY (RESEARCH FOCUS) - CELLULAR/MOLECULAR 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. Students thinking of a career in research should consider the Research Focus, an immersive research experience in the third and fourth years.

This program is offered in English and in French.

Program Requirements

The extended French stream is available with this program.

Compulsory Courses at the 1000 level
- BIO 1130 Introduction to Organismal 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

Compulsory Courses at the 2000 level
- 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: Biodiversity to Biotechnology 3 Units
- CHM 2120 Organic Chemistry II 3 Units
- MAT 2379 Introduction to Biostatistics 3 Units

Compulsory Courses at the 3000 level
- BIO 3009 Research Practicum 6 Units
- BIO 3153 Cell Biology 3 Units
- BIO 3170 Molecular Biology 3 Units

Compulsory Courses at the 4000 level
- BIO 4009 Honours Research 9 Units
- BIO 4158 Applied Biostatistics 3 Units
- BIO 4920 Seminar I Evaluating Science 1.5 Units
- BIO 4921 Seminar II Developing and Communicating Science 1.5 Units

Optional Courses
- 3 course units from: 3 Units
  - BIO 3151 Molecular Biology Laboratory
  - BIO 3152 Cell Biology Laboratory
  - 6 course units from: 6 Units
    - BCH 3120 General Intermediary Metabolism
    - BIO 3102 Molecular Evolution
    - BIO 3119 Population Genetics
    - BIO 3124 General Microbiology
    - BIO 3126 General Microbiology Laboratory
    - BIO 3147 Developmental Biology
    - BIO 3360 Computational Tools for Biological Sciences
    - BCH 4172 Topics in Biotechnology
    - BIO 4115 Topics in Molecular Genetics
    - BIO 4140 Plant Developmental Biology
    - BIO 4144 Plant Biochemistry and Molecular Biology
    - BIO 4145 Eukaryotic Microbiology
    - BIO 4175 Membrane Physiology
    - BIO 4537 Génétique évolutive humaine
    - BPS 3101 Genomics
    - BPS 4104 Bioinformatics Laboratory

3 optional course units in English (ENG) at the 1000 or 2000 level 3 Units
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 9 Units
3 optional course units in biology (BIO), biopharmaceutical science (BPS) or environmental science (EVS) at the 3000 or 4000 level, BCH 3120, BCH 3125, BCH 3356, BCH 4122, BCH 4125, BCH 4188 3 Units
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

Elective Courses
- 15 elective course units 15 Units

Total: 120 Units