

HONOURS BSC IN BIOMEDICAL SCIENCE (RESEARCH FOCUS) - CELLULAR AND MOLECULAR MEDICINE OPTION

Biomedical Science is an interdisciplinary program that focuses on the fundamentals of human structure and function, as well as those of other animals. The first two years provide a background in human anatomy and psychology, in addition to more in-depth knowledge in basic sciences like biology, chemistry, biochemistry, and mathematics. At the end of second year, in addition to courses in biology and biochemistry, students may choose to enter an option within the biomedical sciences program (Neuroscience, Cellular and Molecular Medicine, Bioanalytical Science, Medicinal Chemistry or Biostatistics). The Research Focus is ideal for students thinking of a career in research, as it consists of an immersive research experience in the third and fourth years that will equip students with advanced research, analysis and communication skills applicable to diverse careers. On graduation, they will be ready for more advanced research training or for admission to a professional program in human health.

Admission to this program is competitive and higher averages are required.

This program is offered in English and in French.

Program Requirements

The French immersion stream is available with this program.

Requirements for this program have been modified. Please consult the 2023-2024 calendars (<http://catalogue.uottawa.ca/en/archives/>) for the previous requirements.

Basic Skills

3 optional course units in English (ENG) at the 1000 or 2000 level, excluding ENG 1112 and ENG 1131 3 Units

Compulsory Courses at the 1000 level

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| ANP 1111 | Essentials of Human Anatomy and Physiology I | 3 Units |
| ANP 1115 | Essentials of Human Anatomy and Physiology II | 3 Units |
| BIO 1130 | Introduction to Organismal Biology | 3 Units |
| BIO 1140 | Introduction to Cell and Molecular Biology | 3 Units |
| CHM 1311 | Principles of Chemistry | 3 Units |
| CHM 1321 | Organic Chemistry I | 3 Units |
| MAT 1330 | Calculus for the Life Sciences I | 3 Units |
| MAT 1332 | Calculus for the Life Sciences II | 3 Units |
| PSY 1101 | Introduction to Psychology: Foundations | 3 Units |

Compulsory Courses at the 2000 level

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|----------|-------------------------------|---------|
| BCH 2333 | Introduction to Biochemistry | 3 Units |
| BIO 2133 | Genetics | 3 Units |
| CHM 2120 | Organic Chemistry II | 3 Units |
| MAT 2379 | Introduction to Biostatistics | 3 Units |

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| PHI 2396 | Bioethics | 3 Units |
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Compulsory Courses at the 3000 level

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| BCH 3120 | General Intermediary Metabolism | 3 Units |
| BIM 3009 | Research Practicum | 6 Units |
| BIO 3124 | General Microbiology | 3 Units |
| BIO 3153 | Cell Biology | 3 Units |
| BIO 3170 | Molecular Biology | 3 Units |
| PHS 3341 | Physiology of Sensation, Regulation Mechanisms, Movement and Reproduction | 3 Units |
| PHS 3342 | Physiological Regulation of Intake, Distribution, Protection and Elimination | 3 Units |

Compulsory Courses at the 4000 level

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| BIM 4009 | Research Project - Biomedical Science | 9 Units |
| BIM 4920 | Seminar I Evaluating Science | 1.5 Units |
| BIM 4921 | Seminar II Developing and Communicating Science | 1.5 Units |
| BIO 4158 | Applied Biostatistics | 3 Units |
| PHA 4107 | Introductory Pharmacology - Drugs and Living Systems | 3 Units |

Optional Courses

3 course units from: 3 Units

PSY 1102 Introduction to Psychology: Applications

PSY 2114 Lifespan Psychology

3 course units from: 3 Units

BPS 2110 Introduction to Biopharmaceutical Science

PHY 1321 Principles of Physics I

PHY 1322 Principles of Physics II

3 course units from: 3 Units

BCH 3356 Molecular Biology Laboratory

BIO 3151 Molecular Biology Laboratory

3 course units from: 3 Units

BIO 3360 Computational Tools for Biological Sciences

BPS 4104 Bioinformatics Laboratory

BPS 4127 Advanced Techniques in Biosciences

12 optional course units from the list of optional courses 12 Units

3 optional course units at the 3000 or 4000 level offered by the Faculty of Science ^{1,2} 3 Units

Elective Courses

6 elective course units 6 Units

Total: 120 Units

Notes(s)

1

The following courses are considered as science courses: CMM 3350, CMM 4360, MIC 4100, MIC 4124, MIC 4125, MIC 4126, PHA 4107, PHS 3300, PHS 3341, PHS 3342, PHS 4336.

2

The course SCI 3101 is considered a science optional course.

List of Optional Courses

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| BCH 3125 | Protein Structure and Function | 3 Units |
| BCH 4101 | Human Genome Structure and Function ¹ | 3 Units |
| BCH 4122 | Structural Biology of Proteins | 3 Units |

This is a copy of the 2024-2025 catalog.

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| BCH 4123 | Pathological Biochemistry | 3 Units |
| BCH 4125 | Cellular Regulation and Control | 3 Units |
| BCH 4188 | Synthetic Biology | 3 Units |
| BIM 4103 | Selected Topics in Biomedical Science | 3 Units |
| BIM 4115 | Topics in Molecular Genetics | 3 Units |
| BIM 4316 | Modern Bioanalytical Chemistry | 3 Units |
| BIM 4537 | Génétique évolutive humaine | 3 Units |
| BIO 3102 | Molecular Evolution | 3 Units |
| BIO 3360 | Computational Tools for Biological Sciences | 3 Units |
| BIO 4109 | Advanced Topics in Animal Development | 3 Units |
| BPS 3101 | Genomics | 3 Units |
| BPS 4101 | Human Genome Structure and Function ¹ | 3 Units |
| BPS 4103 | Selected Topics in Biopharmaceutical Science | 3 Units |
| BPS 4104 | Bioinformatics Laboratory | 3 Units |
| BPS 4105 | Human Toxicology and Environmental Health | 3 Units |
| BPS 4127 | Advanced Techniques in Biosciences | 3 Units |
| BPS 4129 | Advanced Chemical Biology | 3 Units |
| BPS 4131 | Advanced Biopharmaceutical Science | 3 Units |
| PHS 4336 | Reproductive Physiology | 3 Units |

Note(s)

1

The courses BCH 4101, BPS 4101 cannot be combined for credits.