

HONOURS BSC BIOCHEMISTRY - SYNTHETIC BIOLOGY OPTION

Biochemistry is the chemistry of life. It provides the foundation for understanding all biological processes as well as the molecular basis and treatment of human disease.

The biochemistry bachelor's provides you with the education you need to play a leading role in new and exciting areas of medical research. You will be exposed to cutting-edge research and knowledge. Our program prepares you for graduate studies and for an academic or research career in the medical sciences. What's more, biochemistry provides an excellent foundation for further studies in medicine and other areas of health care.

You can choose an Honours BSc in Biochemistry, a major or a minor.

If you want to pursue a career in experimental biochemistry, choose the Honours program. If you prefer a basic biochemistry education, choose a major. And if you want to focus on another discipline but are interested in biochemistry, choose a minor.

If you have a particular interest in microorganisms and the role that the immune system plays in health and disease, you can also choose an Honours BSc in biochemistry with an option in microbiology and immunology. We also offer an integrated biotechnology program that lets you combine studies in biochemistry and chemical engineering and receive both a BSc in biochemistry and a BASc in chemical engineering in five years.

As for the language of instruction, compulsory courses and many optional course units are available in either English or French.

If you choose the Honours in Biochemistry, you have the opportunity to complete a full-year research project under the supervision of a professor from the departments of Chemistry and Biomolecular Sciences, Biology, Physics, or Biochemistry, Microbiology and Immunology, or under the supervision of an affiliated principle investigator from one of the many research institutes in the National Capital Region. Given the breadth of research expertise within our program, you can conduct research in many areas of modern biomedicine, including biochemistry, microbiology, immunology, chemical biology, molecular biology, cell biology, proteomics, genomics, systems biology and bioinformatics.

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 (<https://catalogue.uottawa.ca/en/archives/>) for the previous requirements.

Basic Skills

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

Compulsory courses at the 1000 level

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
PHY 1321	Principles of Physics I	3 Units

Compulsory courses at the 2000 level

BCH 2333	Introduction to Biochemistry	3 Units
BIO 2133	Genetics	3 Units
CHM 2120	Organic Chemistry II	3 Units
CHM 2123	Laboratory of Organic Chemistry II	3 Units
CHM 2132	Physical Chemistry for the Life Sciences	3 Units
MAT 2379	Introduction to Biostatistics	3 Units

Compulsory courses at the 3000 level

BCH 3120	General Intermediary Metabolism	3 Units
BCH 3125	Protein Structure and Function	3 Units
BCH 3170	Molecular Biology	3 Units
BCH 3346	Biochemistry Laboratory II	3 Units
BCH 3356	Molecular Biology Laboratory	3 Units
BIO 3124	General Microbiology	3 Units

Compulsory courses at the 4000 level

BCH 4122	Structural Biology of Proteins	3 Units
BCH 4172	Topics in Biotechnology	3 Units
BCH 4188	Synthetic Biology ¹	3 Units
BCH 4932	Biochemistry Seminar ²	3 Units
One option from the following:		9 Units

Option 1: Honours Project

BCH 4040 Honours Research - Biochemistry ³

Option 2: Honours Project Substitution

3 course units from:

BPS 4104 Bioinformatics Laboratory

BPS 4127 Advanced Techniques in Biosciences

and 6 optional course units at the 3000 or 4000 level in science

Optional courses

3 course units from: 3 Units

PHY 1322 Principles of Physics II

PHY 2325 Physics in Biology

3 course units from: 3 Units

BCH 4124 Carbohydrates and Glycobiology

CHM 4139 Enzyme Chemistry and Biocatalysis

6 course units from: 6 Units

BCH 4101 Human Genome Structure and Function

BCH 4123 Pathological Biochemistry

BCH 4125 Cellular Regulation and Control

BCH 4126 Structural Biology of Membranes

BCH 4300 Selected Topics in Biochemistry

BPS 3101 Genomics

BPS 4129 Advanced Chemical Biology

Electives

9 elective course units from the Faculty of Arts, Faculty of Education, Faculty of Law, Faculty of Social Sciences or the Telfer School of Management 9 Units

18 elective course units	18 Units
Total:	120 Units

Note(s)

1

This course may not be available every year.

2

This course runs from September to April.

3

BCH 4040 is highly recommended. A minimum CGPA of 6.5 or greater or a GPA of 6.5 or greater calculated from the two most recent years of full-time study in the Honours Biochemistry program (minimum of 54 units including all compulsory all compulsory 3000 level courses) is required. This course runs from September to April.