3 Units

# HONOURS BSC BIOCHEMISTRY - SYNTHETIC BIOLOGY OPTION

BIO 1140

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 3 Ur level			
Compulsory	courses at the 1000 level		
BIO 1130	Introduction to Organismal Biology	3 Units	

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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 of	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 o	courses at the 4000 level		
BCH 4122	Structural Biology of Proteins	3 Units	
BCH 4172	Topics in Biotechnology	3 Units	
BCH 4188	Synthetic Biology <sup>1</sup>	3 Units	
BCH 4932	Biochemistry Seminar <sup>2</sup>	3 Units	
One option fro	om the following:	9 Units	
Option 1: H	lonours Project		
BCH 4040	Honours Research - Biochemistry <sup>3</sup>		
Option 2: H	Ionours Project Substitution		
3 course units from:			
BPS 4104	Bioinformatics Laboratory		
BPS 4127	Advanced Techniques in Biosciences		
and 6 optic	onal course units at the 3000 or 4000 level in		
science			
Optional cour	ses		
3 course units	s 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 Uni			
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 9 Units Education, Faculty of Law, Faculty of Social Sciences or the Telfer School of Management			

Introduction to Cell and Molecular Biology

### This is a copy of the 2024-2025 catalog.

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 fulltime 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.