

# BIOCHEMISTRY – SPECIALIZATION (SCIENCE) – BACHELOR OF SCIENCE (HONOURS)

## BCHM-P-BSH

**Subject:** Administered by the Department of Biomedical and Molecular Sciences.

**Plan:** Consists of 84.00 units as described below.

**Program:** The Plan, together with sufficient electives to total 120.00 units, will lead to a Bachelor of Science (Honours) Degree.

**Note:** Requirements for this program have been modified. Please consult the [2022-2023 \(https://www.queensu.ca/academic-calendar/archive/2022-2023/arts-science/Calendar\)](https://www.queensu.ca/academic-calendar/archive/2022-2023/arts-science/Calendar) for the previous requirements.

Code	Title	Units
<b>1. Core</b>		
<b>A. Complete the following:</b>		
CHEM 112	General Chemistry	6.00
<b>B. Complete the following:</b>		
BIOL 102	Fundamentals of Biology: Molecular and Cell Biology	3.00
BIOL 103	Fundamentals of Biology: Organisms to Ecosystems	3.00
<b>C. Complete 3.00 units from the following:</b>		<b>3.00</b>
BCHM 102	Introduction to Biochemistry	
PATH 120	Understanding Human Disease in the 21st Century	
<b>D. Complete the following:</b>		
CISC 151	Elements of Computing with Data Analytics	3.00
<b>E. Complete the following:</b>		
BCHM 218	Molecular Biology	3.00
<b>F. Complete the following:</b>		
CHEM 211	Main Group Chemistry	3.00
CHEM 212	Principles of Chemical Reactivity	3.00
CHEM 222	Methods of Structure Determination	3.00
CHEM 223	Organic Reactions	3.00
<b>G. Complete 3.00 units from the following:</b>		<b>3.00</b>
BIOL 243	Introduction to Statistics	
STAM 200	Introduction to Statistics	
<b>H. Complete the following:</b>		
BCHM 313	Molecular Biochemistry	3.00
BCHM 315	Proteins and Enzymes	3.00
BCHM 316	Metabolism	3.00
BCHM 317	Introductory Biochemistry Laboratory	6.00

## I. Complete the following:

BCHM 410	Protein Structure and Function	3.00
BCHM 411	Advanced Molecular Biology	3.00
BCHM 421	Advanced Biochemistry Laboratory I	6.00
BCHM 422	Advanced Biochem Lab II	6.00

## J. Complete the following:

BCHM 432	The Molecular Basis of Cellular Function	3.00
BCHM 442	Seminars in Biochemistry	3.00

## 2. Option

### A. Complete 3.00 units from the following course list: 3.00

BCHM\_List\_A

## 3. Supporting

### A. Complete the following:

MATH 130	Mathematics for Biochemistry and Life Sciences	3.00
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### B. Complete the following:

PHYS 115	Introduction to Physics I	3.00
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## Electives

Elective Courses	36.00
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<b>Total Units</b>	<b>120.00</b>
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## 4. Substitutions

A. Students who have completed MATH 120 or MATH 121, may count 3.00 units towards Supporting **3.A**. The other 3.00 units will be counted towards the student's elective requirement.

B. Students who have completed PHYS 104, PHYS 106, or PHYS 118 may count 3.00 units towards Supporting **3.B**. The other 3.00 units will be counted towards the student's elective requirement.

## 5. Notes

A. Students who may wish later to change to a chemistry program should take one of PHYS 106 or PHYS 104; students who may wish later to change to a physics program should take PHYS 104.

B. Students wishing to take upper-year BIOL courses as electives should take BIOL 205 and BIOL 206 as electives.

C. Recommended to take a course from the BCHM\_Labs Course List.

D. A maximum of 6.00 units from courses offered by other Faculties and Schools may be counted toward the program



and/or Plan requirements. This includes courses in COMM, LAW, NURS and courses in the Faculty of Engineering and Applied Science.

## Biochemistry Course Lists

The following lists contain courses offered through other Departments. In accordance with Academic Regulation 2.6 (Access to Classes), students do not have enrolment priority in all of these courses. Access to these courses may only be made available during the Open Enrolment period, and then only if space permits.

### BCHM\_Labs

Code	Title	Units
<b>Biochemistry Laboratory Courses</b>		
ANAT 309	Functional Histology	3.00
ANAT 312	Functional Neuroanatomy	3.00
ANAT 315	The Human Musculoskeletal System	3.00
ANAT 316	The Human Visceral Systems	3.00
BIOL 300	Ecology	3.00
BIOL 321	Animal Behaviour	3.00
BIOL 323	Vertebrate Diversity and Evolution	3.00
BIOL 335	Limnology and Aquatic Ecology	3.00
BIOL 403	Experimental Techniques in Biology	3.00
BIOL 404	Techniques in Molecular Biology	3.00
CHEM 397	Experimental Chemistry	6.00
CHEM 398	Experimental Chemistry I	3.00
CHEM 399	Experimental Chemistry II	3.00
LISC 390	Integrated Life Science Laboratory I	3.00
LISC 391	Integrated Life Sciences Laboratory	3.00
MICR 435	Advanced Prokaryotic Structure and Function	3.00
PHGY 355	Biomedical Respiratory Physiology	3.00

### BCHM\_List\_A

Code	Title	Units
<b>Options in the Biochemistry Specialization/Major Plan</b>		
ANAT, CANC, CHEM, CRSS, DDHT, EPID, LISC, MICR, NSCI, PATH, PHAR, PHGY, and REPD <sup>1</sup>		
BCHM 370	Genetics and Genomics	3.00
BCHM 410	Protein Structure and Function	3.00
BCHM 411	Advanced Molecular Biology	3.00
BCHM 432	The Molecular Basis of Cellular Function	3.00
BCHM 482	Proteomics and Metabolomics	3.00
BIOL 205	Mendelian and Molecular Genetics	3.00
BIOL 206	Evolutionary Genetics	3.00
BIOL 212	Scientific Methods in Biology	3.00

BIOM 300	Modeling Techniques in Biology	3.00
BMED 470	Principles of 'Omics'	3.00
HLTH 323	Epidemiology	3.00
MATH 221	Vector Calculus	3.00
MATH 225	Ordinary Differential Equations	3.00
MATH 228	Complex Analysis	3.00
MATH 272	Applications of Numerical Methods	3.00
MATH 339	Evolutionary Game Theory	3.00
PHYS 206	Dynamics	3.00
PHYS 216	Introduction to Astrophysics	3.00
PHYS 242	Relativity and Quanta	3.00
PSYC 100	Principles of Psychology	6.00
PSYC 235		6.00
PSYC 236	Introduction to Clinical Psychology	3.00
PSYC 251	Developmental Psychology	3.00
PSYC 271	Brain and Behaviour I	3.00
PSYC 323	Laboratory in Attention	3.00
PSYC 333	Human Sexuality	3.00
PSYC 353	Atypical Development	3.00
PSYC 355	Comparative Cognition: Cognitive Origins Laboratory	3.00
PSYC 370	Brain and Behaviour II	3.00
PSYC 420	Advanced Topics in Cognitive Psychology	3.00
PSYC 422	Advanced Topics in Attention	3.00
PSYC 470	Advanced Topics in Behavioural Neuroscience	3.00
PSYC 471	Behavioural Pharmacology	3.00
PSYC 473	Neurobiology of Psychiatric Disorders	3.00

<sup>1</sup> The following courses cannot be used towards an Option requirement: ANAT 270, BCHM 270, CANC 497, MICR 270, PHAR 270/3.0\*, PHGY 170, and any course numbered 499.