

# BIOCHEMISTRY, B.SC. MAJOR

## Degree Requirements

### Four Year Major (Including Co-operative Option if Selected)<sup>1,2</sup>

Course	Title	Hours
<b>Year 1</b>		
CHEM 1100	Introductory Chemistry 1: Atomic and Molecular Structure and Energetics	3
CHEM 1110	Introductory Chemistry 2: Interaction, Reactivity, and Chemical Properties (C+)	3
CHEM 1120	Introduction to Chemistry Techniques (C) <sup>3</sup>	3
BIOL 1020	Biology 1: Principles and Themes (C)	3
BIOL 1030	Biology 2: Biological Diversity, Function and Interactions	3
PHYS 1050 or PHYS 1020	Physics 1: Mechanics or General Physics 1	3
MATH 1500	Introduction to Calculus <sup>4</sup>	3
STAT 1150 or STAT 1000	Introduction to Statistics and Computing or Basic Statistical Analysis 1	3
<b>Hours</b>		<b>24</b>
<b>Years 1-2</b>		
In Year 1 or Year 2 the following must be completed:		
6 credit hours from the Faculty of Arts including the University Written English "W" requirement <sup>5</sup>		6
<b>Hours</b>		<b>6</b>
<b>Year 2</b>		
CHEM 2100	Organic Chemistry 1: Foundations of Organic Chemistry	3
CHEM 2110	Organic Chemistry 2: Foundations of Organic Synthesis	3
CHEM 2122	Experimental Organic Chemistry	3
CHEM 2510	Introduction to Analytical Chemistry	3
CHEM 2520	Introduction to Analytical Chemistry Techniques	2
CHEM/MBIO 2700	Biochemistry 1: Biomolecules and an Introduction to Metabolic Energy	3
CHEM/MBIO 2710	Biochemistry 2: Catabolism, Synthesis, and Information Pathways	3
CHEM 2720	Principles and Practices of the Modern Biochemistry Laboratory	3
MBIO 1010	Microbiology I <sup>6</sup>	3
MBIO 2020	Microbiology II	3
<b>Hours</b>		<b>29</b>
<b>Year 3</b>		
CHEM 3700	Biophysical Chemistry	3
CHEM 3760	Advanced Methods for the Biochemistry Laboratory	4
MBIO 3410	Molecular Biology	3
<b>Hours</b>		<b>10</b>
<b>Years 3-4</b>		
One of:		3
BIOL 2520	Cell Biology	

MBIO 3450	Regulation of Biochemical Processes	
MBIO 3460	Membrane and Cellular Biochemistry	
MBIO 4540	Biological Energy Transduction	
MBIO 4612	Molecular Genetics of Eukaryotes - Lectures	
CHEM 4360 or CHEM 4620	Signalling and Regulation of Gene Expression or Biochemistry of Nucleic Acids	3
21 credit hours of Chemistry and Microbiology (minimum of 6 credit hours from each department). Of these 21 credit hours, at least 12 hours must be 4000 level courses.		21
21 credit hours of electives <sup>7</sup>		21
<b>Co-op Requirements (if selected):</b>		
SCI 3980	Co-operative Education Work Term 1	0
SCI 3990	Co-operative Education Work Term 2	0
SCI 4980	Co-operative Education Work Term 3	0
SCI 4990	Co-operative Education Work Term 4 (if a 4th work term is selected)	0
<b>Hours</b>		<b>48</b>
<b>Year 4</b>		
CHEM 4630	Biochemistry of Proteins	3
<b>Hours</b>		<b>3</b>
<b>Total Hours</b>		<b>120</b>

<sup>1</sup> IMPORTANT: Students in the co-operative program must ensure that they are able to satisfy the prerequisites for all 3000 and 4000 level courses they plan to take.

<sup>2</sup> The four year Major program need not be completed in the manner prescribed above. This indicates one possible arrangement of the required courses and is meant to be a guide around which students can plan their program.

<sup>3</sup> CHEM 1122 and CHEM 1126 may be used in lieu of CHEM 1120. Note: CHEM 1122 and CHEM 1126 are restricted to Price Faculty of Engineering Students.

<sup>4</sup> MATH 1230, MATH 1510, the former MATH 1520, or MATH 1524 may be taken in place of MATH 1500.

<sup>5</sup> As there are no electives in Year 2 of the program, students should complete the university written English requirement in Year 1. If not completed in Year 1, a "W" course must be completed prior to Year 3 in addition to the required Year 2 courses.

<sup>6</sup> MBIO 1010 can be taken in Year 1 after BIOL 1020.

<sup>7</sup> MATH 1010, MATH 1020, the former MATH 1190, the former COMP 1260, the former COMP 1270, COMP 1500 and COMP 1600 may not be chosen to satisfy this requirement.

(Letters in brackets indicate minimum prerequisite standing for further study.)