BIOLOGY – SPECIALIZATION (SCIENCE) – BACHELOR OF SCIENCE (HONOURS)

Subject: Administered by the Department of Biology.
Plan: Consists of 72.00 units as described below.
Plan Code: BIOL-S
Program: The Plan, alone, or in combination with a Minor in another subject, and with sufficient electives to total 120.00 units, will lead to a Bachelor of Science (Honours) Degree.

Code	Title	Units
1. Core		
A. Complete the following:		
BIOL 102	Fundamentals of Biology: Molecular and Cell Biology	3.00
BIOL 103	Fundamentals of Biology: Organisms to Ecosystems	3.00
B. Complete the following:		
BIOL 200	Diversity of Life	3.00
BIOL 205	Mendelian and Molecular Genetics	3.00
BIOL 206	Evolutionary Genetics	3.00
BIOL 212	Scientific Methods in Biology	3.00
C. Complete the following:		
BIOL 300	Ecology	3.00
D. Complete 3.00 units from the following:		**3.00**
BIOL 334	Comparative Biochemistry	
BIOL 339	Animal Physiology	
BIOL 341	Plant Physiology	
E. Complete the following:		
BIOL 330	Cell Biology	3.00
F. Complete 3.00 units from the following:		**3.00**
BIOL 243	Introduction to Statistics	
STAT 269	Statistics and Probability II	
2. Option		
A. Complete 3.00 units from the following:		**3.00**
CHEM at the 200-level or above		
B. Complete one of the following research or seminar options:		**27.00**
i. Research Option:		
a. Complete the following:		
BIOL 537	Research in Biology	
b. Complete 15.00 units from the following:		
BIOL at the 300-level or above		
BIOL_Subs_A		
BIOL_Subs_B		
ii. Seminar Option:		
a. Complete 3.00 units from the following:		
BIOL at the 500-level		
b. Complete 6.00 units from the following:		
BIOL at the 400-level or above		
c. Complete 18.00 units from the following:		
BIOL at the 300-level or above		
BIOL_Subs_A		
BIOL_Subs_B		
3. Supporting		
A. Complete 6.00 units from the following:		**6.00**
CHEM 109 & CHEM 110	General Chemistry I: From Atoms to Matter and General Chemistry II: Thermodynamics and Kinetics	
or		
CHEM 112	General Chemistry	
B. Complete 6.00 units from the following:		**6.00**
MATH 120	Differential and Integral Calculus	
or		
MATH 121	Differential and Integral Calculus	
or		
MATH 123 & MATH 124	Differential and Integral Calculus I and Differential and Integral Calculus II	
Electives and/or Other Plan Requirements		**48.00**
Total Units		**120.00**

4. Substitutions

A. BCHM 310/9.0* (or the combination of BCHM 315/3.0 and BCHM 316/3.0) may be substituted for 3.00 units from (BIOL 334/3.0 or BIOL 339/3.0 or BIOL 341/3.0) with the remaining units applied toward Option requirements in the degree program.

B. Students who have completed CHEM 113 (https://www.queensu.ca/academic-calendar/search/?P=CHEM%20113)/3.0 and CHEM 114 (https://www.queensu.ca/academic-calendar/search/?P=CHEM%20114)/3.0 may take CHEM 117 (https://www.queensu.ca/academic-calendar/search/?P=CHEM%20117)/1.5 to gain general chemistry laboratory experience. While this sequence totals 7.50 units, it is considered equivalent to CHEM 112 (https://www.queensu.ca/academic-calendar/search/?P=CHEM%20112)/6.0 and may be used to fulfill Supporting **3.A.** of the Biology Specialization Plan when applicable; the

additional 1.50 units will be directed to the student's elective requirement.

C. MATH 126/6.0 (or the combination of MATH 127/3.0 and MATH 128/3.0) may be substituted for Supporting **3.B.** with prior approval from the Chair of Undergraduate Studies in the Department of Biology.

D. Students registered in a BIOL Plan prior to May 1, 2016, may use BCHM 218/3.0 as an alternative to BIOL 330/3.0 to satisfy Core **1.E.**

5. Notes

A. PHYS 115/3.0 and PHYS 116/3.0 (or PHYS 104/6.0 or PHYS 106/6.0 or PHYS 118/6.0) is highly recommended but not required.

B. 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 BMED, COMM, GLPH, HSCI, LAW, NURS, and courses offered by Smith Engineering.

Biology Course Lists

The following lists may 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.

BIOL_Subs_A

Code	Title	Units
ANAT at the 300-level and above		
BCHM at the 300-level and above		
MICR 221	Fundamental Microbiology	3.00
MICR 271	Introduction to Microbiology	3.00
MICR at the 300-level and above		
LISC at the 300-level and above		
PATH at the 300-level and above		
PHGY at the 300-level and above		

BIOL_Subs_B

Code	Title	Units
APSC 400	Technology, Engineering & Management (TEAM) [1]	7.00
CHEE 400	Technology, Engineering & Management (TEAM) [1]	7.00
CHEM at the 200-level and above		
ENSC 301	Environmental Assessment	3.00
ENSC 307	Marine Environmental Issues	3.00
ENSC 320	Wildlife Issues in a Changing World	3.00
ENSC 425	Ecotoxicology	3.00
EPID 301	Principles of Epidemiology	3.00
GEOL 337	Paleontology	3.00
GEOL 466	Isotopes and the Environment	3.00
GPHY 304	Northern and Arctic Environments	3.00
GPHY 310	Landscape Ecology	3.00
GPHY 314	Climate Change	3.00
GPHY 315	Advanced Field Measurements and Their Analysis	3.00
GPHY 318	Advanced Biogeography	3.00
HLTH 323	Epidemiology	3.00
PHAR 370	Fundamentals of Pharmacology and Therapeutics	3.00
PHIL 301	Bioethics	3.00
PSYC 236	Introduction to Clinical Psychology	3.00
PSYC 271	Brain and Behaviour I	3.00
PSYC 370	Brain and Behaviour II	3.00
PSYC 470	Advanced Topics in Behavioural Neuroscience	3.00
STAT 353	Probability II	3.00

[1] Note that the unit weighting system in Smith Engineering differs from that in the Faculty of Arts and Science. Therefore, upon acceptance of any course from Smith Engineering, the unit weighting towards Arts and Science degree requirements shall be at the discretion of the Associate Dean (Academic). Usually, a one-term course shall count as 3.00 units and a two-term course as 6.00 units.