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

BTEC-P-BSH

Subject: Administered by the Department of Biology.
Plan: Consists of 90.00 units as described below.
Program: The Plan, with sufficient electives to total 120.00 units, will lead to a Bachelor of Science (Honours) Degree.

Code	Title	Units
1. Core		
– CORE PROGRAM –		
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 205	Mendelian and Molecular Genetics	3.00
BIOL 206	Evolutionary Genetics	3.00
C. Complete the following:		
BIOL 212	Scientific Methods in Biology	3.00
D. Complete 6.00 units from the following:		**6.00**
BIOL 334	Comparative Biochemistry	
BIOL 339	Animal Physiology	
BIOL 341	Plant Physiology	
E. Complete the following:		
BIOL 330	Cell Biology	3.00
BCHM 218	Molecular Biology	3.00
F. Complete 3.00 from the following:		**3.00**
BIOL 401	Experimental Approaches to Animal Physiology	
BIOL 402	Experiments in Plant Physiology	
G. Complete 3.00 units from the following:		**3.00**
BIOL 403	Experimental Techniques in Biology	
BIOL 404	Techniques in Molecular Biology	
H. Complete 3.00 units from the following:		**3.00**
BCHM 441	Current Topics in Biochemistry	
BIOL 360	Biotechnology and Society	
BIOL 441	Molecular Genetics	
BIOL 503	Plant Biotechnology	
BIOL 507	Biotechnology	
– OTHER CORE –		
I. Complete the following:		
CHEM 112	General Chemistry	6.00
J. Complete 6.00 units from the following:		**6.00**
MATH 121	Differential and Integral Calculus	
MATH 120	Differential and Integral Calculus	
MATH 123 & MATH 124	Differential and Integral Calculus I and Differential and Integral Calculus II	
K. Complete the following:		**3.00**
BIOL 243	Introduction to Statistics	
or STAT 26	Statistics and Probability II	
2. Option		
A. Complete 6.00 units from the following:		**6.00**
BIOL 334	Comparative Biochemistry	
CHEM at the 200-level or above		
B. Complete 12.00 units from the following course list		**12.00**
BTEC_Biology		
C. Complete 3.00 units from one of the following options:		**3.00**
i. Biology Option:		
a. Complete 3.00 units from the following:		
BIOL 200	Diversity of Life	
ii. Biomedical and Molecular Science Option:		
a. Complete 3.00 units from the following:		
BCHM 270	Biochemical Basis of Health and Disease	
MICR 221	Fundamental Microbiology	
MICR 270	Infection, Immunity and Inflammation	
PHGY 215	Principles of Mammalian Physiology I	
PHGY 216	Principles of Mammalian Physiology II	
D. Complete 18.00 units from one of the following options:		**18.00**
i. Course Option:		
a. Complete 18.00 units from the following course lists:		
BTEC_Biology		
BTEC_Options		
ii. Research Option:		
a. Complete 12.00 units from the following:		
BIOL 537	Research in Biology	
or BIOL 541	Research in Biotechnology	
b. Complete 6.00 units from the following course lists:		
BTEC_Biology		
BTEC_Options		
Electives		

Elective Courses	30.00
Total Units	**120.00**

3. Substitutions

A. MATH 126 may be substituted for MATH 121 or MATH 120 with prior approval from the Chair of Undergraduate Studies in the Department of Biology.

4. Notes

A. Each of BIOL 334, BIOL 339, BIOL 341, BIOL 401, BIOL 402, BIOL 403, BIOL 404, BIOL 441, and BCHM 441 can be used as either a Core Course or an Option Course, but not both.

B. BIOL 538, BIOL 539 and BIOL 540 can be used towards elective requirements, but cannot be used towards Option Course requirements.

C. CHEE courses at the 300-level and above require a course in differential equations such as BIOM 300 or MATH 225 or and permission of the Department.

D. This Plan is no longer combined with the Biotechnology Diploma Program offered by St. Lawrence College. Students previously admitted to this combined degree/diploma should consult the *2020-2021 Academic Calendar* for plan requirements.

E. 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 in the Faculty of Engineering and Applied Science.

Biotechnology 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 September Open Enrolment Period, and then only if space permits.

BTEC_Biology

Code	Title	Units
Biotechnology Biology Courses		
BIOL 315	Plants and Human Culture	3.00
BIOL 331	Analytical Genomics	3.00
BIOL 333	Applied Biology	3.00
BIOL 334	Comparative Biochemistry	3.00
BIOL 339	Animal Physiology	3.00
BIOL 341	Plant Physiology	3.00
BIOL 343	Data Analysis for Biologists	3.00
BIOL 360	Biotechnology and Society	3.00
BIOL 401	Experimental Approaches to Animal Physiology	3.00
BIOL 402	Experiments in Plant Physiology	3.00
BIOL 403	Experimental Techniques in Biology	3.00
BIOL 404	Techniques in Molecular Biology	3.00
BIOL 409	Bioremediation	3.00
BIOL 430	Molecular Genetics of Development	3.00
BIOL 431	Cellular Basis of Adaptation	3.00
BIOL 432	Computation and Big Data in Biology	3.00
BIOL 441	Molecular Genetics	3.00
BIOL 501	Recent Research in Molecular	3.00
BIOL 502	Plant Cell Responses to Environmental Stress	3.00
BIOL 503	Plant Biotechnology	3.00
BIOL 504	Extremophiles	3.00
BIOL 505	Cell Signaling in Development and Disease	3.00
BIOL 506	Biochemical Adaptations to Life Under Extreme Conditions	3.00
BIOL 507	Biotechnology	3.00
BIOL 508	Biology of the Cell Cycle	3.00

BTEC_Options

Code	Title	Units
Biotechnology Option Courses		
APSC 400	Technology, Engineering & Management (TEAM)	7.00
BCHM 315	Proteins and Enzymes	3.00
BCHM 316	Metabolism	3.00
BCHM 317	Introductory Biochemistry Laboratory	6.00
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
CHEE 229	Cell Based Engineering Princip	4.00
CHEE 342	Environmental Biotechnology	3.50
CHEE 380	Biochemical Engineering	3.50
CHEE 400	Technology, Engineering & Management (TEAM)	7.00
CHEE 440	Pharmaceutical Technology	3.50
CHEE 484	Bioremediation	3.50
DDHT 459	Principles of Drug Discovery	3.00
DDHT 460	Principles of Drug Development	3.00
MICR 221	Fundamental Microbiology	3.00
MICR 270	Infection, Immunity and Inflammation	3.00
MICR 271	Introduction to Microbiology	3.00

MICR 320	Microbes in Health and Disease	3.00
MICR 360	Immunology	3.00
MICR 386	Fundamentals of Immunology in Health and Disease	3.00
MICR 435	Advanced Procaryotic Structure and Function	3.00
MICR 451	Viral Pathogenesis	3.00
MICR 461	Advanced Immunology	3.00
PHAR 340	Principles of General Pharmacology I	3.00
PHAR 370	Fundamentals of Pharmacology and Therapeutics	3.00
PHAR 416	Xenobiotic Disposition and Toxicity	3.00
PHAR 450	Principles of General Pharmacology II	3.00
PHAR 480	Drug Discovery and Development	3.00