COMPUTER SCIENCE AND BIOLOGY HONOURS (B.SC.) (77 CREDITS)

Offered by: Computer Science (Faculty of Science)
Degree: Bachelor of Science
Program credit weight: 77

Program Description

This program focuses on the fundamentals of biology with a focus on molecular biology, and gives them computational and mathematical skills needed to manage, analyze, and model large biological datasets. Compared to the Joint Major counterpart, this program requires additional research credits and a larger number of advanced courses. Students must maintain a minimum CGPA of 3.5. To graduate with First Class Honours, the CGPA must be at least 3.75.

Degree Requirements — B.Sc.

This program is offered as part of a Bachelor of Science (B.Sc.) degree.

To graduate, students must satisfy both their program requirements and their degree requirements.

- The program requirements (i.e., the specific courses that make up this program) are listed under the Course Tab (above).
- The degree requirements—including the mandatory Foundation program, appropriate degree structure, and any additional components—are outlined on the Degree Requirements page.

Students are responsible for ensuring that this program fits within the overall structure of their degree and that all degree requirements are met. Consult the Degree Planning Guide on the SOUSA website for additional guidance.

Note: For information about Fall 2025 and Winter 2026 course offerings, please check back on May 8, 2025. Until then, the "Terms offered" field will appear blank for most courses while the class schedule is being finalized.

Program Prerequisites

U0 (freshman) students should take:

Expand allContract all

Course	Title	Credits
BIOL 111 & BIOL 112	Principles: Organismal Biology. and Cell and Molecular Biology.	6
CHEM 110 & CHEM 120	General Chemistry 1. and General Chemistry 2.	8
MATH 133	Linear Algebra and Geometry.	3
MATH 140 & MATH 141	Calculus 1. and Calculus 2.	8
or MATH 150 & MATH 151	Calculus A. and Calculus B.	
PHYS 101 & PHYS 102	Introductory Physics - Mechanics. and Introductory Physics - Electromagnetism.	8
or PHYS 131 & PHYS 142	Mechanics and Waves. and Electromagnetism and Optics.	

Note that MATH 150 Calculus A.-MATH 151 Calculus B. provides equivalence for required course MATH 222 Calculus 3..

Students who do not have a background in computer programming at the level of COMP 202 Foundations of Programming. or COMP 204 Computer Programming for Life Sciences. must take one of these courses. COMP 204 Computer Programming for Life Sciences. is considered equivalent to COMP 202 Foundations of Programming. as a prerequisite for COMP 206 Introduction to Software Systems. and COMP 250 Introduction to Computer Science..

Required Courses (43-53 credits)

Bio-Physical Sciences Core

Expand allContract all

Course	Title	Credits
BIOL 219	Introduction to Physical Molecular and Cell Biology.	4
BIOL 301	Cell and Molecular Laboratory.	4
BIOL 395	Quantitative Biology Seminar.	1
CHEM 212	Introductory Organic Chemistry 1.[1]	4
COMP 202	Foundations of Programming.[2]	3
MATH 222	Calculus 3.[1]	3
MATH 223	Linear Algebra.	3
MATH 323	Probability.	3

1 Students with CEGEP-level credit for the equivalents of MATH 222 Calculus 3. and/or CHEM 212 Introductory Organic Chemistry 1. (see http://www.mcgill.ca/students/courses/plan/transfer/ for accepted equivalents) may not take these courses at McGill and should replace them with elective courses to satisfy the total credit requirement for their degree.

2 Students may take either COMP 202 Foundations of Programming. or COMP 204 Computer Programming for Life Sciences., but not both. Students who have sufficient knowledge of programming are not required to take these courses.

Computer Science and Mathematics

Expand allContract all

Course	Title	Credits
COMP 204	Computer Programming for Life Sciences.[1]	3
COMP 206	Introduction to Software Systems.	3
COMP 250	Introduction to Computer Science.	3
COMP 252	Honours Algorithms and Data Structures.[2]	3
COMP 561	Computational Biology Methods and Research.	4
MATH 240	Discrete Structures.	3

1 Students may take either COMP 202 Foundations of Programming. or COMP 204 Computer Programming for Life Sciences., but not both. Students who have sufficient knowledge of programming are not required to take these courses.

[2] Students with credit for COMP 251 Algorithms and Data Structures. cannot take COMP 252 Honours Algorithms and Data Structures., and must instead include at least 6 credits at the 400-level or above, 3 credits of which must be at the 500-level.

Biology

Expand allContract all

Course	Title	Credits
BIOL 202	Basic Genetics.	3
BIOL 215	Introduction to Ecology and Evolution.	3

Joint Courses

Expand allContract all

Course	Title	Credits
COMP 402D1	Honours Project in Computer Science and Biology.	3
COMP 402D2	Honours Project in Computer Science and Biology.	3

Complementary Courses (24 credits)

3-6 credits from the following:

Expand allContract all

Course	Title	Credits
MATH 315	Ordinary Differential Equations.	3
MATH 324	Statistics.	3

The remaining 18-21 credits to be chosen from the following, with at least 9 credits at the 400 level or above:

Computer Science Block

9-12 credits from:

Expand allContract all

Course	Title	Credits
COMP 273	Introduction to Computer Systems.	3

and any other COMP courses at the 400 level or above except COMP 400 Project in Computer Science, COMP 401 Project in Biology and Computer Science., COMP 402 Honours Project in Computer Science and Biology., COMP 462 Computational Biology Methods., COMP 561 Computational Biology Methods and Research.. At least 3 of theses 9-12 credits must be at the 400 level or above.

Biology Block

9-12 credits from the following, with 3-6 credits at the 400 level or above:

Expand allContract all

Course	Title	Credits
BIOL 300	Molecular Biology of the Gene.	3
BIOL 303	Developmental Biology.	3
BIOL 304	Evolution.	3
BIOL 306	Neural Basis of Behaviour.	3
BIOL 308	Ecological Dynamics.	3
BIOL 309	Mathematical Models in Biology.	3
BIOL 310	Biodiversity and Ecosystems.	3
BIOL 313	Eukaryotic Cell Biology.	3
BIOL 314	Molecular Biology of Cancer.	3
BIOL 316	Biomembranes and Organelles.	3
BIOL 319	Introduction to Biophysics.	3
BIOL 320	Evolution of Brain and Behaviour.	3
BIOL 389	Laboratory in Neurobiology.	3
BIOL 395	Quantitative Biology Seminar.	1
BIOL 416	Genetics of Mammalian Development.	3
BIOL 434	Theoretical Ecology.	3
BIOL 435	Natural Selection.	3
BIOL 509	Methods in Molecular Ecology.	3
BIOL 518	Advanced Topics in Cell Biology.	3
BIOL 520	Gene Activity in Development.	3
BIOL 524	Topics in Molecular Biology.	3
BIOL 530	Advances in Neuroethology.	3
BIOL 532	Developmental Neurobiology Seminar.	3
BIOL 546	Genetics of Model Systems.	3
BIOL 551	Principles of Cellular Control.	3
BIOL 568	Topics on the Human Genome.	3
BIOL 569	Developmental Evolution.	3
BIOL 580	Genetic Approaches to Neural Systems.	3
BIOL 588	Advances in Molecular/Cellular Neurobiology.	3
HGEN 575	Human Biochemical Genetics.	3
NEUR 310	Cellular Neurobiology.	3