Structure of Computer Science academic programs

Academic programs at McGill are normally four-year, 120-credit programs. In the B.Sc., B.A. and B.A. & Sc. degrees, this is split into a 30-credit freshman program and a three-year, 90-credit departmental program. Students entering directly from high schools (outside of Quebec) or from international baccalaureates usually start with the 30-credit freshman program, whereas students coming from Quebec CEGEP programs are usually granted 30 credits at the time of admission and they start directly into the 90-credit departmental program.

In the first year of the 90-credit program, students in all computer science programs take mainly "core" courses in computer science, that teach important basic concepts, as well as mathematics courses. In the second and third year, students complete their specific program requirements by choosing from a wide range of courses, in different computer science sub-disciplines. Extra mathematics courses are also part of many programs. All computer science programs leave room for students to pursue minor degrees in other fields of interest.

Science Freshman Program: Computer Science/Software Engineering
- COMP 202 Foundations of Programming
- MATH 133 Linear Algebra and Geometry
- 2 Calculus courses
- plus at least 3 of BIOL/CHEM/ PHYS

DEC in Science or in Computer Science and Mathematics
You can apply directly to any of the Major or Joint Computer Science programs in the Faculty of Science. Be sure to apply to the Physical, Earth, Math and Math and Computer Sciences (PEMC) groups. If you are missing any basics science requirements, you will be asked to complete them at McGill.

All other DECS
If you came from another DEC, you may not have the prerequisite courses to be admitted in the Faculty of Science. In this case, you can apply to programs in Computer Science and Software Engineering through the Faculty of Arts.

Arts Programs in Computer Science

Students must have completed MATH 133, MATH 140 AND MATH 141 or their equivalents in order to begin taking courses in Computer Science programs.

Some students choose to complete a B.A. degree. In fact, it is possible to get quite a strong training in Computer Science within the B.A. degree program by taking both the **Computer Science Major Concentration** (36 credits) along with the **Supplementary Minor in Computer Science** (18 credits). This is ideal for students who love math but have little basic science background.

In terms of Computer Science content, this is almost the same at the B.Sc. major in Computer Science. You will be taking the same Computer Science classes and you will work in the same state-of-the-art computer labs as students in the B.Sc. program. In fact, in the classes and labs there are no distinctions between students in the B.A. program and students in the B.Sc. program - they are equal.

The B.A. degree is suitable for you if your background does not include very much Science, but you do have a good background in Mathematics and you have an interest and aptitude for logical reasoning.

Major Concentration in Software Engineering
(36 credits): Focus on design and development of complex software systems.

Minor Concentration in Computer Science
This Minor Concentration (18 credits) may be taken in conjunction with any program in the Faculty of Arts with the approval of the adviser of the student's main program and the School of Computer Science.

At the time of registration in the penultimate year, students must declare their intent to receive the Minor. Students are strongly encouraged to talk to an adviser of the School before choosing the complementary courses to ensure they follow an approved course sequence.

McGill
School of Computer Science
Undergraduate Programs
www.cs.mcgill.ca
514-398-7071

What is Computer Science?

Computer Science encompasses everything from theory to applications, including software engineering, programming languages, robotics, compilers, databases, game design and development, operating systems, artificial intelligence, computational biology, computer vision, and the analysis of algorithms.

Why You Should Apply

A degree in computer science offers excellent job prospects. Computer Science and Software Engineering professions have weathered the recession much better than other fields, and are predicted to have very strong growth, both by the Canadian government and by the U.S. department of labour. Montreal also has a very strong computing job market, with jobs available in financial software development, computer games, computer networking and many other disciplines

How about an internship during your undergraduate studies?

An internship allows you to apply knowledge gained from classes to hands-on work situations. Internships help you establish a better sense of career goads. Pain internships can help finance your education. Upon graduation, many Science interns go on to permanent jobs with their host organization.

Internship Year in Science (IYS) is a paid 8, 12 or 16 month internship available to B.Sc. It is a career-related professionally supervised, paid work term which allows you to experience firsthand the current practices and technologies in business and industry. If you prefer a shorter period, there is also an option of completing a 4-month **Industrial Practicum.**

Science Programs in Computer Science

Major/Honours Computer Science

This program is the standard Major program offered by School of Computer Science. It provides a broad introduction to the principles of Computer Science and opportunity to acquire in-depth knowledge of sub-disciplines. The **Honours** program offer a stronger focus on algorithms & research.

Major Computer Science – Computer Games

This program is a specialization within Computer Science. If fulfils all basic requirements of the Major Computer Science. Complementary courses focus on topics that are important for understanding the technology behind computer games. Student gain experience in software development and design needed for computer game development.

Major/Honours Software Engineering

This program provides a broad introduction to the principles of computer science. Focus on design and development of software systems. The **Honours** program provides a more challenging and research-oriented version of the Major in Software Engineering.

Liberal Program: Core Science Component in Computer Science (45 credits) or Software Engineering (49 credits):
Similar in spirit to the major program, but smaller, allows for more breadth.

Major Computer Science & Biology

This program will train students in the fundamentals of biology - with a focus on molecular biology - and will give them computational and mathematical skills needed to manage, analyze, and model large biological datasets. Note: This Joint program is offered in both the PEMC and BBL groups.

Honours Computer Science & Biology Compared to its non-Honours counterpart, the Honours program requires additional research credits and a larger number of advanced courses. Student must have and maintain a minimum CGPA of 3.5. Students may complete program with a maximum

Major/Honours MATH & Computer Science

Rigorous conceptual thinking and problem solving, applied to practical problems. The **Joint Honours** program is ideal for continuing to a PhD in either MATH or Computer Science.

Major/Honours Stats & Computer Science

Focus on data analysis, mathematics and programming skills. The **Honours** program is ideal for entry into graduate school in either discipline.

Major/Honours Physics & Computer Science

Combine the two fields and get a unique set of skills. The **Honours** program is intended to be flexible and allow students to take either more physics or more computer science courses at the advanced level.

Minor in Computer Science (24 credits)

Designed for students who want to gain a basic understanding of computer science principles and get an overview of some computer science areas. Basic computer skills are important in many domains, the Minor is useful for students majoring in any discipline.

Lots of cool research projects!

➢ Computational modeling of biological data
➢ Graphics and Animation
➢ Artificial Intelligence
➢ Social network analysis
➢ Cryptography
➢ Quantum computing
➢ Cyberphysical Systems
➢ Algorithmic Game Theory