Bachelor of Engineering
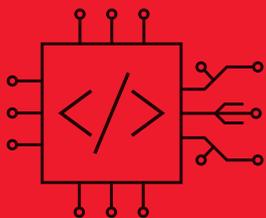
Software Engineering Co-op

What is software engineering?

Software engineers specify, design, develop, and test complex software used in a variety of applications such as flight navigation, video games, web and mobile applications, self-driving cars, autonomous robots, or machine learning. They may perform similar functions as general software developers, but software engineers holistically apply the principles and techniques of computer science, engineering, and mathematical analysis to cover the entire lifecycle of engineering modern software applications.

Why choose the Software Engineering Co-op program?

The Software Engineering Co-op Program will offer students the opportunity to focus their studies on the skills needed to design and develop complex software systems while participating in 4 mandatory industrial work-terms, leading to a B.Eng. degree with 16 months of paid professional work experience prior to graduation. Co-operative education combines traditional, in-class education with supervised hands-on experience. Students will alternate study and work-terms and take on increasingly challenging work that will help define post-graduation goals.

What are the benefits of co-op education?

Students in this program will complete paid work-terms in research and industrial settings locally, nationally, or internationally. During these work-terms, students perform technical engineering tasks and submit required assignments, for which they receive 2 university credits, a grade, and a formal evaluation by the employer.

Students will benefit from the co-op experience by:

- ◢ Improving their teamwork and leadership skills
- ◢ Receiving individualized career counselling
- ◢ Gaining relevant paid work experience
- ◢ Developing their skill-sets to advance their career
- ◢ Discovering what career fits best through different job opportunities
- ◢ Meeting key people in industry who can help facilitate job placement

What can I do when I graduate?

Graduating students are equipped to work in a variety of industries, including AI, video games, Web applications and interfaces, IT, telecom, robotics, medical tech, biomedicine, automotive industry, aerospace industry, microelectronics and electronic systems, power systems and energy. Recent graduates from the program have gone on to careers in a variety of industries including:

Google - Software Developer

Amazon - Software Engineer

Unity - DevOps Engineer

CAE - Systems Engineer

Environment Canada - Software Developer

Morgan Stanley - Technical Associate

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Skills learned prior to each work-term:

Student skills for 1st co-op term:

- ◢ Develop software in Java, C/C++, Python
- ◢ Master integrated development environments (Eclipse, IntelliJ)
- ◢ Implement test cases
- ◢ Understand modeling in UML
- ◢ Use code generators and modern version control systems (Git)
- ◢ Design simple digital circuits
- ◢ Understand basics shell scripts
- ◢ Solid foundation in statistics and logics

Student skills for 2nd co-op term:

- ◢ Develop multi-tier web applications
- ◢ Deploy software as a service over a cloud platform
- ◢ Familiar with advanced technologies: microservices, RESTful API, modern web frontends (Vue.js / React), Android, JavaScript
- ◢ Understand and contribute to continuous integration chains
- ◢ Understand agile project planning
- ◢ Work as a team in a complex software engineering project
- ◢ Use database repositories and backends
- ◢ Program using more complex data and structures and algorithms

Student skills for 3rd & 4th co-op terms:

- ◢ Software as a service
- ◢ Computer games
- ◢ Cyber-physical systems (e.g. Internet-of-Things, safety-critical systems)
- ◢ Artificial intelligence & data science

Software Engineering Research

Faculty members in the Department of Electrical and Computer Engineering have a strong research profile in various areas of software engineering including model-driven systems engineering, requirements engineering, cyber-physical systems, Internet-of-Things, cloud computing, advanced graphics, and many more. Cutting edge software engineering research also actively exploits recent advances of machine learning.

Student life and engagement

The Faculty of Engineering provides several opportunities to participate in a variety of clubs, activities, and student government. Below are a few groups students can join to connect with others and enhance their life outside of the classroom:

- ◢ Electrical, Computer & Software Engineering Student Society
- ◢ Engineering Undergraduate Society
- ◢ McGill Robotics
- ◢ McGill Artificial Intelligence Society
- ◢ GameDev McGill
- ◢ Hack4Impact
- ◢ Promoting Opportunities for Women in Engineering

How do I apply?

Admissions information:

www.mcgill.ca/engineering/future-students/how-apply

Contact us

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