

Careers in Computer Programming

Owen Sheikhanzai



Careers

Robotics Engineer

- Design, build, wire and code robots

Software Developer

- Write code and design UI

Robotics Engineering

A robotics engineer designs, builds and programs robotic equipment. They first design the robot in a CAD (computer aided design) software. Then they build and wire the robot. Once the robot is built, they write the code for it in one of various programming languages, some of the most popular ones being c, c++ and java.

A robotics engineer designs and builds robots that improve quality of life, handle repetitive and dangerous tasks. They also write, test, and monitor computer programs that direct a robot's actions.



Responsibilities (Robotics Engineering)

- Design the robot, document how it's going to get put together, what will be needed to put it together, what electrical components will be needed and how it's going to be wired.
- Oversee and troubleshoot robotic systems to make sure that they are functioning correctly, are properly optimized and cause no safety risk.
- Write code for robotic system.
- Document cost of electrical and hardware equipment.
- Prototype robotic system and improve design based on feedback and performance.
- Build final product.



Salary and Future Outlook (Robotics Engineering)

In Canada, the salary for a Robotics Engineer starts out around \$52K per year and can go as high as \$97K per year, with the average being around \$71K per year.

Robotics Engineering is one of the careers that is growing rapidly. Each year the demand for a robotics engineer is increasing.



Post-Secondary Program (Robotics Engineering)

Queen's University in Kingston, Ontario has a bachelor's program called Mechatronics and Robotics Engineering. The program is for 4 years.

In this course you will be taught how to build advanced robotic systems through a multitude of ways as well as how to use artificial intelligence.

Admission requirements are: English Studies 12, Calculus 12 or Pre-Calculus 12, Physics 12 and Chemistry 12.

To the side are the first year courses for the program.



Queen's
UNIVERSITY

Fall	Winter
Engineering Practice (Modules 1 and 2)	Mechatronics Design I
Physics I	Physics II
Chemistry and Materials	Calculus II
Intro. to Computer Programming	Introduction to Linear Algebra
Engineering Graphics	Applied Engineering Mechanics
Calculus I	Data Structures and Algorithms

Skills and Habits (Robotics Engineering)



There are certain skills and habits that are required for Robotics Engineering

- Teamwork and collaboration - to build a highly advanced robot you will need to work with others, whether it be because they can do something that you can't or because it would take you way too long to build it on your own.
- Analyzing and problem solving - you will encounter plenty of problems when building a robotic system, so you will need to be able to analyze the reason and solve them.
- Programming - you need to be able to write a code for your robot unless you just want it to be a decoration.
- 3D design/drafting - you can't really build a robot without knowing what it should look like.
- Creative thinking - you need to come up with creative ideas for the robot to make it stand out from the rest.

Software Developer

A software developer designs applications that are used for everyday digital tasks such as, watching videos, looking something up and sending messages. They write the base code for the app and then work with UI and UX designers to design the look of the app, or even do it themselves.





Responsibilities (Software Developer)

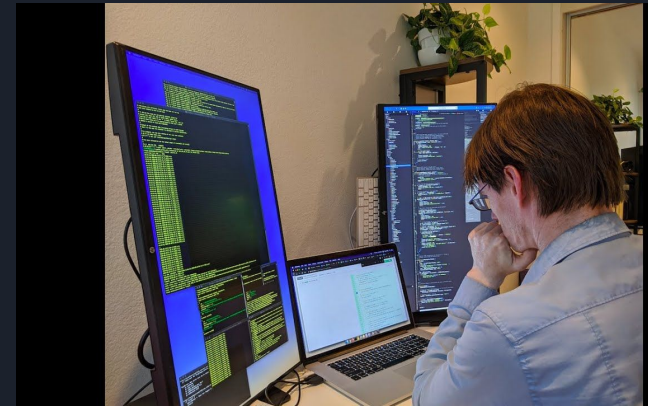
- Write code for software
- Work with UI/UX designers to design software
- Analyse and troubleshoot existing code to fix problems and improve performance and stability
- Take client and user feedback and improve upon software



Salary and future outlook (Software Developer)

In Canada, the salary for a Software Developer starts out around \$50K per year and can go as high as \$93K per year, with the average being around \$69K per year.

Software developer is one of the careers that is growing rapidly. Each year the demand for a software developer is increasing.





Post-Secondary Program (Software Development)

University of British Columbia has a bachelor's program called Computer Science which they are offering at both campuses in Vancouver and Okanagan. The program is for 4 years.

In this course you will learn about web development, databases, operating systems, software engineering and plenty more.

Admission requirements are: English Studies 12 or English First Peoples 12, Pre-Calculus 12 (minimum 67%), Anatomy and Physiology 12, or Chemistry 12, or Physics 12

Computation, Programs and Programming
Models of Computation
Differential Calculus
Integral Calculus

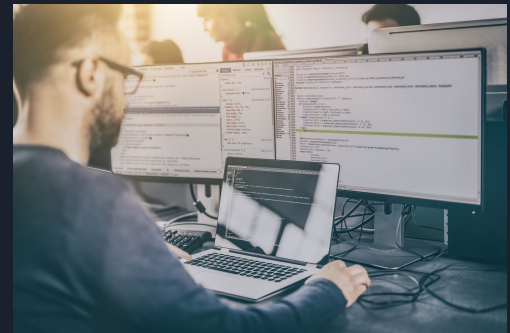


To the side are the first year courses for the program.

Skills and Habits (Software Development)

There are certain skills and habits that are required for Software Development

- Teamwork and collaboration - to build a highly software you will need to work with others, whether it be because they can do something that you can't or because it would take you way too long to build it on your own.
- Analyzing and problem solving - you will encounter plenty of problems when building a software, so you will need to be able to analyze the reason and solve them.
- Programming - software development is about writing code.
- Creative thinking - you need to come up with creative ideas for the software to make it stand out from the rest.





Sources

To learn more about Robotics Engineering, visit: [What does a robotics engineer do? - CareerExplorer](#)

To learn more about Software Development, visit: [What does a software engineer do? - CareerExplorer](#)

Sources: [What does a robotics engineer do? - CareerExplorer](#), [How to Become a Robotics Engineer, Robotics engineer salary in Canada](#), [What Does a Robotics Engineer Do? \(With Skills\) | Indeed.com Canada](#), [Software Developer Job Description \[Updated for 2022\]](#), [Software Developer Job Description, Software Developer Salary in Canada | PayScale](#), [Computer Science at UBC's Vancouver campus | UBC Undergraduate Programs and Admissions](#),