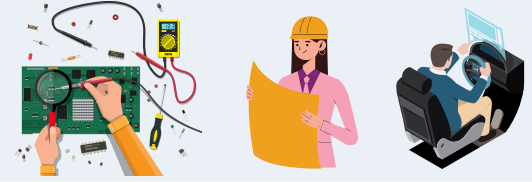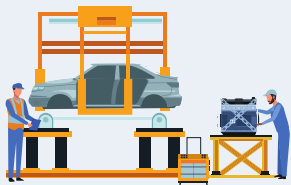# Occupational Profile

FOCAL Initiative

Computer Engineers

Industry and the modern technologies that enable it are powered and connected by computers, their components, and telecommunication equipment. Computer engineers research, design, develop and modify computer and telecommunication hardware and equipment. They work on revolutionary products such as semiconductors, which are required for most modern devices to function. The Internet of Things has also lead to devices becoming increasingly connected, computerized and intelligent, increasing the utility of computer technology, and the demand for computer engineers.

Where do Computer Engineers work?

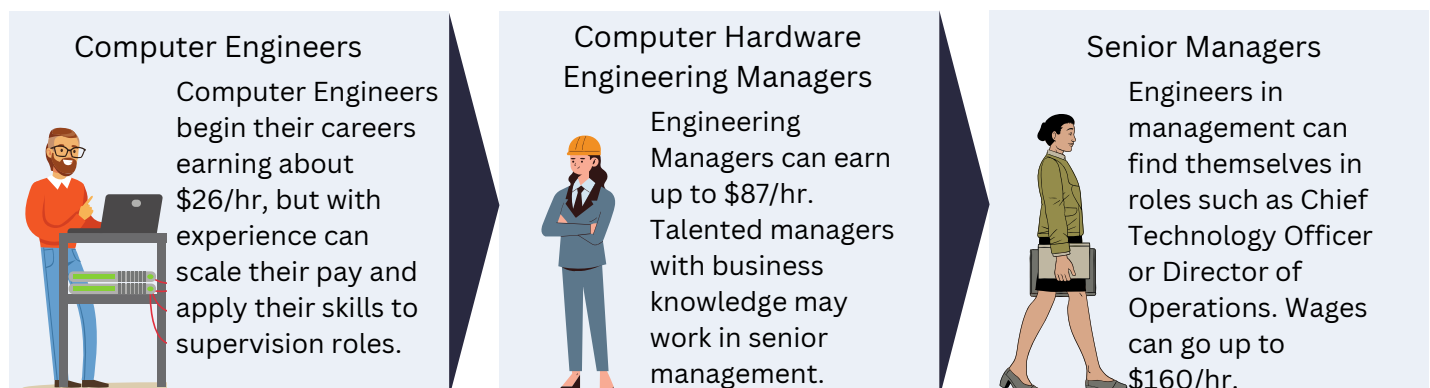| Vehicle Computer Component Manufacturing | Architecturual and Engineering Services | Telecommunication Carriers | Computer Systems Design and Related Services | Scientific Research and Development Services |

What do Computer Engineers do?

Computer Engineers work on a variety of hardware and components used in advanced computing. This ranges from micro processing units, internet and communication devices and more. Their work consists heavily of research, improvement and development of advanced manufactured goods. Below are some tasks Computer Engineers regularly perform as part of their work:

- Analyze user requirements, and design and develop system architecture and specifications
- Research, design, develop and integrate computer and telecommunications hardware such as microprocessors, integrated circuit boards and semiconductor lasers
- May lead and coordinate teams of engineers, technologists, technicians and drafters in the design and development of computer and telecommunications hardware.
- Research, evaluate and integrate network system and data communication hardware and software

Career pathways & potential earnings of Computer Engineers

Computer Engineers can progress to other roles and positions with adequate experience and skills:

Computer Engineers

Computer Engineers begin their careers earning about $26/hr, but with experience can scale their pay and apply their skills to supervision roles.

Computer Hardware Engineering Managers

Engineering Managers can earn up to $87/hr. Talented managers with business knowledge may work in senior management.

Senior Managers

Engineers in management can find themselves in roles such as Chief Technology Officer or Director of Operations. Wages can go up to $160/hr.

Occupational Profile

Computer Engineers can also apply their skills and expertise in other occupations such as the following:

- Electrical and Electronic Engineers
- Computer and Information Systems Managers

How do I become a Computer Engineer?

There are several requirements to become a Computer Engineer. Some requirements may vary by province or company. Below are the most commonly required qualifications to work as a Computer Engineer:

- **Minimum Education:** A bachelor's degree in computer engineering, electrical or electronics engineering, engineering physics or computer science. Some positions may require a post-graduate education.
- **Certification, Licensing, and Training:** Licensing by a provincial or territorial body of engineers is required to approve engineering drawings and reports, and to practice as a professional engineer (P.Eng.). Three to four years of supervised work experience and training, as well as passing of an exam are required to obtain licensing.

Education & Training

What are the most important skills to have as a Computer Engineer?

Computer Engineers develop a strong understanding of computer technology and principles of engineering through their education. These principles are refined and skills are added as they gain experience in the workplace. Below are skills that are important for Computer Engineers to possess.

Technical Knowledge and Skills

- Engineering and Technology
- Administration and Management
- Quality Control Analysis
- Operations Monitoring
- Computer-aided Design (CAD) Software
- Systems Evaluation and Analysis
- Computer Programming and Development Software

Soft Skills

- Critical Thinking
- Judgement and Decision Making
- Complex Problem Solving
- Originality
- Mathematical Reasoning
- Information Ordering
- Communication

Computer Engineering jobs in Canada

Jobs and Recruitment

In 2021, over 25,000 Computer Engineers were employed across Canada's sectors and industries. FOCAL projects more than 80 job openings for computer engineering in Canada's automotive manufacturing sector between 2021 and 2030. Additionally, about 70 computer engineers are needed to fill recruitment gaps in the sector, especially as it embraces new technologies utilizing advanced computing, like electric vehicles (EVs) or autopiloting.

Learn more about the job market for computer engineers, as well as about many other developments and new technologies in Canada's automotive manufacturing by visiting our website futureautolabourforce.ca.

You can also check our social media by following these links:

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