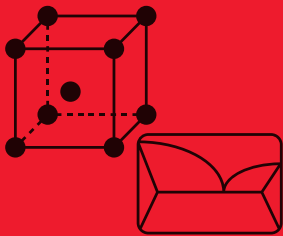


# Bachelor of Engineering Materials Engineering

Faculty of Engineering



## What is materials engineering?

Materials engineering is the backbone of all practical applications of engineering. Materials engineers transform matter, producing and evaluating material properties (mechanical, electrical, optical, thermal, chemical, biocompatible, surface) with the assistance of computer models. They are trained to understand the relationship between structure and function in materials such as metals and alloys, ceramics, industrial minerals, polymers, and composite nanomaterials.

## Is this program for me?

Materials engineering students learn how steel and other materials are made, and how their structure and properties are quantified. Technical complimentary courses offer advanced knowledge of topics including aerospace materials, metallurgy, and nano-fabrication. Practical learning is emphasized with laboratories and the co-op program.

The Department is small and close-knit, offering opportunity for interactions between students and professors.

## Coursework and research areas

The first year includes general science courses in math, chemistry and physics. Québec CEGEP students typically receive one-year advanced standing. Students then take core materials science and engineering courses, from characterization of properties to production processes and applications. Students learn the fundamentals of solid mechanics, thermodynamics, heat and mass transfer, phase transformation, surfaces, additive manufacturing, process modeling, electronic material properties, and computational materials design to support their understanding of materials. The Department's faculty are leading researchers in additive manufacturing, physical metallurgy,

biomaterials, computational materials, solar energy conversion and storage, primary mineral processing, sustainable processes, electronic materials, and microscopy.

## Why McGill?

McGill's Materials Engineering Co-op Program enables students to work in different industries while completing their academic degree. This industrial experience adds value to students' future coursework, builds their resumé, is an opportunity to travel and work in different environments and cultures, and allows students to identify a career that interests them. Co-op interview experiences are valuable when applying for work after graduation. In some cases, co-op students receive full-time employment offers from a co-op employer before they even graduate from the program.



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### **Prof. Marta Cerruti**

Associate Professor and Associate Chair, Department of Mining and Materials Engineering

Canada Research Chair in Bio-synthetic Interfaces

Prof. Marta Cerruti works at the interface between material science, chemistry, and biology. Her research lab focuses on materials whose surfaces are designed to interact with the biological environment. Examples of her work include the creation of polymeric biodegradable scaffolds where cells can grow into to help bones regenerate and gel-coated, drug-carrying nanoparticles targeted to the appropriate cells, as well catalysts to degrade pollutants, anodes for Li-ion batteries, and raphene-oxide based membranes for speakers or microphones.



## How do I apply?

Admissions information:

[www.mcgill.ca/undergraduate-admissions/apply](http://www.mcgill.ca/undergraduate-admissions/apply)

## What can I do when I graduate?

Training in process and materials engineering provides skills for a wide range of employment opportunities. Depending on their interests, graduates can work in companies concentrating minerals or producing metals, be hired by engineering or management consultancies to work on local and global projects, test and design materials for the aerospace, battery, or automotive industries, or further their research skills in graduate school. The program affords students with transferable skills such as problem solving, time management, and working in design teams.

Recent graduates from the program have gone on to careers in a variety of industries such as:

### **BBA**

Jr. Engineer

### **Bell Helicopter**

Metallurgical Engineer

### **Bombardier Aerospace**

Materials and Processes Engineer

### **C & D Zodiac**

Research & Development Engineer

### **Hatch**

Process Engineer/Metallurgist

### **Rolls-Royce Canada**

Material and Process Specialist

## 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:

- ▲ Mining Engineering Undergraduate Society (MEUS)
- ▲ Engineering Undergraduate Society (EUS)

- ▲ Metsoc student chapter
- ▲ Promoting Opportunities for Women in Engineering (POWE)

## Contact us

### **Department of Mining and Materials Engineering (Materials)**

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3610 University

[coordinator.minmat@mcgill.ca](mailto:coordinator.minmat@mcgill.ca)

[www.mcgill.ca/materials](http://www.mcgill.ca/materials)

### **McGill Engineering Student Centre (MESC)**

Frank Dawson Adams Building, Room 22  
3450 University Street

[info.faceng@mcgill.ca](mailto:info.faceng@mcgill.ca)

[www.mcgill.ca/engineering/students/undergraduate/mesc](http://www.mcgill.ca/engineering/students/undergraduate/mesc)

### **Engineering**

### **Career Centre (ECC)**

Frank Dawson Adams Building, Room 22  
3450 University Street

[careers4engineers@mcgill.ca](mailto:careers4engineers@mcgill.ca)

[www.mcgill.ca/careers4engineers](http://www.mcgill.ca/careers4engineers)



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