

# MASTER OF ENGINEERING IN ENTREPRENEURIAL ENGINEERING DESIGN

## Overview

### Summary

- Degrees offered: Master of Engineering (MEng)
- Registration status options: Full-time; Part-time
- Language of instruction: English
- Program options (expected duration of the program):
  - within two years of full-time study
- For immigration purposes, the summer term (May to August) for this program is considered a regularly scheduled break approved by the University. Students should resume full-time studies in September.
- Academic units: Faculty of Engineering (<http://engineering.uottawa.ca/>), School of Electrical Engineering and Computer Science (<https://engineering.uottawa.ca/school-EECS/>), Department of Mechanical Engineering (<http://engineering.uottawa.ca/mechanical/>)

## Program Description

The Masters of Engineering in Entrepreneurial Engineering Design provides advanced training and mentorship in engineering design in the context of entrepreneurship. The focus of the program is on the design of new products or technology that will be commercialized or made available to have community impact for engineers who aspire to start companies. The program requirements encourage the development of high-level communication skills and the development of a wealth of transferable skills that will be useful by graduates regardless of their ultimate career trajectory. These learning outcomes will be supported at all levels of the program requirements through the evaluation and mentorship of professors, advisors, peers, startup project committee members, and external mentors and coaches.

The program leverages the design spaces available at the Faculty of Engineering including the Simon Nehme Design Commons, the Richard L'Abbé Makerspace, the MakerLab, the Manufacturing Training Centre and the Brunsfield Centre. In addition, the Faculty's MakerLaunch accelerator program will help bridge graduating students into the startup ecosystem of the National Capital Region. Through the use of mentored projects, it will also provide opportunities for the commercialization of uOttawa research.

## Main Areas of Research

All of the professors involved in the program have research directly related to or involving the design and creation of new technology and technology.

Key research themes are:

- Enabling technologies for health and augmented life
- Technology for digital transformation of society
- Sustainable and resilient infrastructure
- Emerging material and processes
- Photonics for devices, networks, and energy

## Other Programs Offered Within the Same Discipline or in a Related Area

- Master of Engineering in Advanced Materials and Manufacturing
- Master of Engineering in Biomedical Engineering
- Master of Engineering in Chemical Engineering
- Master of Engineering in Civil Engineering
- Master of Computer Science
- Master of Computer Science, Concentration in Artificial Intelligence
- Master in Electronic Business Technologies
- Master of Engineering in Electrical and Computer Engineering
- Master of Engineering in Engineering Management
- Master of Engineering in Environmental Engineering
- Master of Engineering in Mechanical Engineering
- Master of Systems Science

## Fees and Funding

- Program fees

The estimated amount for university fees (<https://www.uottawa.ca/university-fees/>) associated with this program are available under the section Finance your studies (<http://www.uottawa.ca/graduate-studies/programs-admission/finance-studies/>).

International students enrolled in a French-language program of study may be eligible for a differential tuition fee exemption (<https://www.uottawa.ca/university-fees/differential-tuition-fee-exemption/>).

- To learn about possibilities for financing your graduate studies, consult the Awards and financial support (<https://www.uottawa.ca/graduate-studies/students/awards/>) section.

## Notes

- The program is governed by the academic regulations (<http://www.uottawa.ca/graduate-studies/students/general-regulations/>) in effect for graduate studies at the University of Ottawa.
- This is a bilingual program in the sense that full support is given to complete the requirements for the program in either English or French. International internships and projects are welcomed, but reports and other gradable components must be submitted in English or French. We have a full complement of fully bilingual professors and advisors who can work with, mentor and advise students in the language of their choice. However, the professional language for engineering and for much of the access to venture capital in North America is English. In order to succeed in industry after graduation, students will need to develop a least a minimum capability in English. This program will provide an appropriately supportive environment for francophone students to do so at their own pace. The internship and project courses can be done entirely in French but the environment is bilingual which often switches to English for professional and technical conversations. Elective courses can be done entirely in French as directed studies or topics courses with a bilingual professor. The regularly scheduled elective courses and all the core courses will be delivered in English. However, students have the right, and are encouraged, to complete all work required for the degree in either English or French. As stipulated in the University's bilingualism regulations (Academic Regulations I-2), students will be able to write their work, including their internship and

project, in the official language of their choice (French or English). Students will be informed of the policy on their language rights via the student handbook and the website. There are sufficient bilingual faculty to supervise and grade internships and project reports in either language.

## Program Contact Information

Graduate Studies Office, Faculty of Engineering (<https://engineering.uottawa.ca/graduate-studies-office/>)  
STE 1024  
800 King Edward Ave.  
Ottawa ON Canada  
K1N 6N5

Tel.: 613-562-5347  
Fax.: 613-562-5129  
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Twitter | Faculty of Engineering (<https://twitter.com/uOttawaGenie/?lang=en>)

Facebook | Faculty of Engineer (<https://www.facebook.com/uottawa.engineering/>)

## Admission Requirements

For the most accurate and up to date information on application deadlines, language tests and other admission requirements, please visit the specific requirements (<https://www.uottawa.ca/graduate-studies/programs-admission/apply/specific-requirements/>) webpage.

### To be eligible, candidates must:

- Hold a bachelor's degree with a specialization, or a major (or equivalent) in engineering, science, computer science, or a related discipline, with a minimum admission average of 80% (A-).

Note: International candidates must check the admission equivalencies (<https://www.uottawa.ca/graduate-studies/international/study-uottawa/admission-equivalencies/>) for the diploma they received in their country of origin.

- Demonstrate a good academic performance and aptitude for design and entrepreneurship in previous studies as shown by official transcripts, project reports, or any other documents.
- Provide a statement of interest that answers the following questions:
  - Why am I interested in this program?
  - What is drawing me to the program?
  - What skills, expertise and other qualities do I have that demonstrate my suitability for the program?
  - What examples can I give to support my assertion that I have those skills?
- Provide a two-page summary of the design and business concept you want to work on during your master's studies
- Provide a curriculum vitae

### The Accelerated Stream has two additional requirements:

- Complete as many as three courses allowed by the graduate program in Entrepreneurial Engineering Design each with 70% (B) or higher grade (taken during any Microprogram or Bachelor's program or in the Faculty of Engineering).
- Have an admission average of A- (80%) or higher.

## Language Requirements

Applicants whose first language is neither French nor English must provide proof of proficiency in the language of instruction.

Note: Candidates are responsible for any fees associated with the language tests.

## Notes

- The admission requirements listed above are minimum requirements and do not guarantee admission to the program.
- Admissions are governed by the academic regulations (<http://www.uottawa.ca/graduate-studies/students/general-regulations/>) in effect for graduate studies.
- Admission to the program is very competitive, and preference will be given to candidates who have a few years of full-time work experience in engineering or a related field.

## Program Requirements

Requirements for this program have been modified. Please consult the 2022-2023 calendars (<http://catalogue.uottawa.ca/en/archives/>) for the previous requirements.

## Master's with Coursework and Project

To receive this Master's degree, a student enrolled in the program must successfully complete 30 course units.

Students must meet the following requirements:

### Compulsory Courses:

EED 5120	Technology Entrepreneurship for Engineers and Computer Scientists	3 Units
EED 5140	Engineering Design	3 Units
GNG 5131	Sales and Influence for Engineers	3 Units
GNG 5141	Creativity and Innovation	3 Units

### Internship

EED 5901	Entrepreneurial Engineering Design Internship I	3 Units
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### Project

EED 5998	Entrepreneurial Engineering Design Project I	3 Units
EED 5999	Entrepreneurial Engineering Design Project II	6 Units

### Optional Courses:

6 optional course units to fit the chosen area of interest for entrepreneurial engineering design <sup>1</sup>	6 Units
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### Note

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Optional courses must be approved by the entrepreneurial engineering design program to fit the chosen area of interest for entrepreneurial engineering design.

## List of Optional Courses

The following list of courses, offered by other programs, are available for entrepreneurial engineering design students. Other courses are possible, including courses from other faculties but will require permission of the program offering the course.

ADM 6420	Digital Marketing	1.5 Units
BMG 5103	Biomedical Instrumentation	3 Units
BMG 5106	Introduction to Medical Imaging Principles and Technology	3 Units
BMG 5109	Advanced Topics in Medical Instrumentation	3 Units
BMG 5311	Design of Medical Devices and Implants	3 Units
CHG 8191	Selected Topics Chemical Engineering	3 Units
CVG 5162	River Hydraulics	3 Units
CVG 6308	Special Topics in Civil Engineering	3 Units
CSI 5102	Topics in Medical Computing	3 Units
CSI 5111	Software Quality Engineering	3 Units
CSI 5112	Software Engineering	3 Units
CSI 5122	Software Usability	3 Units
CSI 5155	Machine Learning	3 Units
CSI 5386	Natural Language Processing	3 Units
CSI 5387	Data Mining and Concept Learning	3 Units
EBC 6230	Business Process Management and Performance Measurement	3 Units
EED 5902	Entrepreneurial Engineering Design Internship II	3 Units
ELG 5161	Robotics: Control, Sensing and Intelligence	3 Units
ELG 5374	Computer Communication Network	3 Units
ELG 6373	Advanced Topics in Solid State Devices and Ic Technology	3 Units
ELG 7132	Topics in Electronics I	3 Units
GNG 5100	Introduction to Engineering Management	3 Units
GNG 5121	Taguchi methods for efficient Engineering RD	3 Units
GNG 5122	Operational Excellence and Lean Six Sigma	3 Units
GNG 5123	Enterprise Architecture	3 Units
GNG 5124	Internet Technologies and Mobile Commerce	3 Units
GNG 5125	Data Science Applications	3 Units
GNG 5130	Communication and Influence for Engineers	3 Units
GNG 5131	Sales and Influence for Engineers	3 Units
GNG 5300	Topics in Engineering	3 Units
GNG 5310	Topics in Industry Practice	3 Units
MBA 6220	Sales Development Strategies for Products Services	1.5 Units
MBA 6262	Entrepreneurial Thinking in Practice	1.5 Units
MBA 6295	Seminar in Management I	1.5 Units
MBA 6297	Mobilizing Seminar in Management I	1.5 Units
MBA 6298	Mobilizing Seminar in Management II	1.5 Units

## Master's with Coursework and Project, Accelerated Stream

Students must meet the requirements for the regular Masters with Coursework and Project, but can receive credit, during their first semester of registration, for those courses that were already taken during a uOttawa, Faculty of Engineering Micropogram or Bachelor's program.

## Research Research Fields & Facilities

Located in the heart of Canada's capital, a few steps away from Parliament Hill, the University of Ottawa is among Canada's top 10 research universities.

uOttawa focuses research strengths and efforts in four Strategic Areas of Development in Research (SADRs):

- Canada and the World
- Health
- e-Society
- Molecular and Environmental Sciences

With cutting-edge research, our graduate students, researchers and educators strongly influence national and international priorities.

## Research at the Faculty of Engineering

Areas of research:

- Chemical and Biological Engineering
- Civil Engineering
- Electrical Engineering and Computer Science
- Mechanical Engineering

For more information, refer to the list of faculty members and their research fields on **Uniweb**.

**IMPORTANT: Candidates and students looking for professors to supervise their thesis or research project can also consult the website of the faculty or department (<https://www.uottawa.ca/graduate-studies/students/academic-unit-contact-information/>) of their program of choice. Uniweb does not list all professors authorized to supervise research projects at the University of Ottawa.**

## Courses

### EED 5120 Technology Entrepreneurship for Engineers and Computer Scientists (3 units)

Hands-on introduction to the many dimensions of starting and growing a technology company. How to evaluate market opportunities, develop a product that customers need, raise capital and build a winning team. Skills and tools to turn technical ideas into profitable sustainable businesses. Students will submit a report describing how their graduate studies work (e.g., thesis or project) could be commercialized using the approaches learned in class.

**Course Component:** Lecture

The courses EED 5120, GNG 5120 cannot be combined for units.

### EED 5140 Engineering Design (3 units)

Open ended, hands-on engineering design course that provides students with fundamentals and advanced concepts of the engineering design process from client empathy to prototyping and testing. Students work directly with clients to solve a real societal need. There is a strong component of teamwork and lifelong learning.

**Course Component:** Lecture

The courses EED 5140, GNG 5140 cannot be combined for units

**EED 5901 Stage de conception en ingénierie entrepreneuriale I /  
Entrepreneurial Engineering Design Internship I (3 crédits / 3 units)**

Un stage dans une start-up qui comprend des tâches et des produits livrables pour mieux comprendre ce qu'il faut pour faire fonctionner une start-up. Un rapport sera rédigé pour décrire les principales réalisations et idées apprises durant le stage. Les stages internationaux sont autorisés. / An internship at a startup which includes tasks and deliverables to gain a better understanding of what it entails to operate a startup. A report will be written to describe the main accomplishments and insights learned during the internship. International internships are permitted.

**Volet / Course Component:** Stage / Work Term

**EED 5902 Stage de conception en ingénierie entrepreneuriale II /  
Entrepreneurial Engineering Design Internship II (3 crédits / 3 units)**

Un deuxième stage dans une start-up qui comprend des tâches et des produits livrables pour mieux comprendre ce qu'il faut pour faire fonctionner une start-up. Un rapport sera rédigé pour décrire les principales réalisations et idées apprises durant le stage. Les stages internationaux sont autorisés. / A second internship at a startup that includes tasks and deliverables to gain a better understanding of what it entails to operate a startup. A report will be written to describe the main accomplishments and insights learned during the internship. International internships are permitted.

**Volet / Course Component:** Stage / Work Term

**EED 5998 Projet de conception en ingénierie entrepreneuriale I /  
Entrepreneurial Engineering Design Project I (3 crédits / 3 units)**

La deuxième année est axée sur l'apprentissage par l'expérience. Dans ce cours, des équipes seront formées et le projet sera sélectionné selon un processus interactif impliquant une collaboration entre l'équipe d'étudiants, les conseillers, les partenaires de l'industrie et les participants au mentorat. Durant ce cours, le concept du produit sera développé, de même que le modèle commercial initial. Le projet impliquera toujours de créer une nouvelle organisation basée sur un plan de conception et de développement d'ingénierie afin de concrétiser une idée technique répondant à un besoin de société ou d'entreprise. L'idée technique peut provenir de chercheurs universitaires, de partenaires de l'industrie ou des étudiants eux-mêmes. Exceptionnellement, les membres d'un projet qui ne semble pas viable seront autorisés avant le début de la deuxième partie de ce cours, EED 5999, à changer d'équipe pour laquelle les projets aboutissent et nécessitent un soutien supplémentaire. / The focus of the second year is on experiential learning. In EED 5998, teams will be formed, and the project will be selected through an interactive process, involving collaboration between the student team, advisors, industry partners and mentoring participants. During EED 5998, the product concept will be developed, as will the initial business model. The project will always involve creating a new organization based on an engineering design and development plan to realize a technical idea that meets a societal or business need. The technical idea can come from faculty research, from industry partners or from the students themselves. Exceptionally, team members on a project that does not look like it will be viable will receive permission to change before the start of EED 5999 to a different team whose projects are succeeding and require additional support.

**Volet / Course Component:** Recherche / Research

**EED 5999 Projet de conception en ingénierie entrepreneuriale II /  
Entrepreneurial Engineering Design Project II (6 crédits / 6 units)**

Une fois que le concept de produit aura été développé dans le cours précédant, EED 5998, les équipes se concentreront dans le cours EED 5999, sur le développement de leurs produits. Pendant ce cours sur les projets de conception, les étudiants travailleront sur la conception détaillée, le modèle commercial validé, le prototypage itératif et la mise en œuvre de leurs projets. / Once the product concept is developed in EED 5998, teams will focus on developing their products in EED 5999. During this design projects course, students will work on the detailed design, validated business model, iterative prototyping and the implementation of their projects.

**Volet / Course Component:** Recherche / Research