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 Brunsfeld 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
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:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>EED 5120</td>
<td>Technology Entrepreneurship for Engineers and Computer Scientists</td>
<td>3 Units</td>
</tr>
<tr>
<td>EED 5140</td>
<td>Engineering Design</td>
<td>3 Units</td>
</tr>
<tr>
<td>GNG 5131</td>
<td>Sales and Influence for Engineers</td>
<td>3 Units</td>
</tr>
<tr>
<td>GNG 5141</td>
<td>Creativity and Innovation</td>
<td>3 Units</td>
</tr>
<tr>
<td>Internship</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EED 5901</td>
<td>Entrepreneurial Engineering Design Internship I</td>
<td>3 Units</td>
</tr>
</tbody>
</table>

Project

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>EED 5998</td>
<td>Entrepreneurial Engineering Design Project I</td>
<td>3 Units</td>
</tr>
<tr>
<td>EED 5999</td>
<td>Entrepreneurial Engineering Design Project II</td>
<td>6 Units</td>
</tr>
</tbody>
</table>

Optional Courses:

6 optional course units to fit the chosen area of interest for entrepreneurial engineering design 1

Note

1. 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.

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADM 6420</td>
<td>Digital Marketing</td>
<td>1.5 Units</td>
</tr>
<tr>
<td>BMG 5103</td>
<td>Biomedical Instrumentation</td>
<td>3 Units</td>
</tr>
</tbody>
</table>
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 5120 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 3 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 (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. 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 précédent, 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