MASTER OF ENGINEERING
ENGINEERING MANAGEMENT

Summary
• Degree offered: Master of Engineering (MEng)
• Registration status options: Full-time; Part-time
• Language of instruction: English
• Program option (expected duration of the program):
  • within two years of full-time study
• Academic units: Faculty of Engineering (https://engineering.uottawa.ca), Telfer School of Management (http://www.telfer.uottawa.ca/en).

Program Description
The Engineering Management Program offers a Master of Engineering in Engineering Management and a Graduate Diploma in Engineering Management. The program is supervised by a committee composed of representatives from the Telfer School of Management and of the Faculty of Engineering.

Main Areas of Research
• Production and operations management
• Robotics and manufacturing management
• Reliability and maintainability engineering
• Human resource management, industrial and technology marketing
• Technical project management and control
• Research and development and innovation management
• Operation research
• Forecasting

Learning Outcomes
The objective of the Master of Engineering in Engineering Management program is to develop the knowledge and skills of engineers and scientists in the management of people, projects, resources and organizations in technical environments.

Other Programs Offered Within the Same Discipline or in a Related Area
• Graduate Diploma in Engineering Management

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
• Programs are governed by the general regulations (http://www.uottawa.ca/graduate-studies/students/general-regulations) in effect for graduate studies.
• In accordance with the University of Ottawa regulation, students have the right to complete their assignments, examinations, research papers, and theses in French or in English.

Program Contact Information
Graduate Studies Office, Faculty of Engineering (https://engineering.uottawa.ca/graduate-studies-office)

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Ottawa ON Canada
K1N 6N5
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Fax.: 613-562-5129
Email: engineering.grad@uottawa.ca

Twitter | Faculty of Engineering (https://twitter.com/uOttawaGenie?lang=en)
Facebook | Faculty of Engineering (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/specifc-requirements) webpage.

To be eligible, candidates must:
• Have a bachelor’s degree with a specialization or major in engineering or in science (or equivalent) with a minimum admission average of 70% (B).

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.

Language Requirements
Applicants must be able to understand and fluently speak the language of instruction (English) in the program to which they are applying. Proof of linguistic proficiency may be required.

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 general 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.

Transfer from the Diploma to the Master’s Program

Students registered in the Graduate Diploma in Engineering Management may apply for transfer to the Master of Engineering degree in Engineering Management, obtain advanced standing for courses completed under the Graduate Diploma in Engineering Management, complete the remaining units, and finally obtain the Master of Engineering degree.

Students who have completed the Graduate Diploma in Engineering Management may apply for admission to the Master of Engineering in Engineering Management, obtain advanced standing for courses completed under the Graduate Diploma in Engineering Management, complete the remaining units, and obtain the Master of Engineering degree.

Advanced standing will not be granted for courses completed at other institutions under any circumstances.

Program Requirements

Master’s with Coursework

Requirements for this program have been modified. Please consult the 2018-2019 calendars (https://catalogue.uottawa.ca/en/archives) for the previous requirements.

To receive the Master of Engineering in Engineering Management, a student enrolled in the program must successfully complete 30 units of academic work: 12 units of core courses, 12 units of optional courses, and a mandatory 6 units project course comprising applied research work of industrial relevance done in teams.

After completing the 12 units of mandatory compulsory courses and at least 6 units of optional courses, all students must register for the mandatory compulsory capstone 6 units course (EMP 6997) Engineering Management Project, which comprises applied research work of industrial relevance done in teams.

List of Optional Courses

Optional courses enable students to develop knowledge and skills in an area of interest. Optional courses must include at least 3 units of engineering (EMP, GNG) courses and at least 3 units of management (ADM, MBA) courses, from the list of optional courses. Although every effort is made towards offering listed optional courses every year, students accepted in the program should verify course availability and plan accordingly. Various other courses are offered on an irregular basis as Special Topics.

It is the student’s responsibility to verify that they satisfy the prerequisites and language requirements for the elective courses that they wish to take and, after consultation with the academic advisor, to obtain permission from the professors teaching theses courses.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>ADM 6261</td>
<td>Project Management II</td>
<td>1.5</td>
</tr>
<tr>
<td>ADM 6277</td>
<td>E-Business Energy Management</td>
<td>1.5</td>
</tr>
<tr>
<td>ADM 6281</td>
<td>Supply Chain Management</td>
<td>1.5</td>
</tr>
<tr>
<td>ADM 6286</td>
<td>International E-Business Strategies for EBT</td>
<td>1.5</td>
</tr>
<tr>
<td>ADM 6287</td>
<td>Business Intelligence Technologies and Big Data Analytics for EBT</td>
<td>1.5</td>
</tr>
<tr>
<td>ADM 6420</td>
<td>Electronic Marketing</td>
<td>1.5</td>
</tr>
<tr>
<td>EMP 5101</td>
<td>Industrial Organization</td>
<td>3</td>
</tr>
<tr>
<td>EMP 5102</td>
<td>Systems Engineering and Integration</td>
<td>3</td>
</tr>
<tr>
<td>EMP 5103</td>
<td>Reliability, Quality and Safety Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EMP 5109</td>
<td>Topics in Engineering Management</td>
<td>3</td>
</tr>
<tr>
<td>EMP 5116</td>
<td>Issues in Management and Operation of Communication Networks</td>
<td>3</td>
</tr>
<tr>
<td>EMP 5117</td>
<td>Foundations of Software Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EMP 5118</td>
<td>Technology Project Management Practice</td>
<td>3</td>
</tr>
<tr>
<td>EMP 5119</td>
<td>Project Information Management</td>
<td>3</td>
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<tr>
<td>EMP 5120</td>
<td>Product Development and Management</td>
<td>3</td>
</tr>
<tr>
<td>EMP 5122</td>
<td>Operational Excellence and Lean Six Sigma</td>
<td>3</td>
</tr>
<tr>
<td>EMP 5169</td>
<td>Advanced Topics in Reliability Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EMP 5179</td>
<td>Manufacturing Systems Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EMP 5910</td>
<td>Directed Studies</td>
<td>3</td>
</tr>
<tr>
<td>GNG 5120</td>
<td>Technology entrepreneurship for Engineers and Computer Scientists</td>
<td>3</td>
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<tr>
<td>GNG 5121</td>
<td>Planning of Experiments in Engineering Design</td>
<td>3</td>
</tr>
<tr>
<td>GNG 5122</td>
<td>Operational Excellence and Lean Six Sigma</td>
<td>3</td>
</tr>
<tr>
<td>GNG 5123</td>
<td>Enterprise Architecture</td>
<td>3</td>
</tr>
<tr>
<td>GNG 5124</td>
<td>Internet Technologies and Mobile Commerce</td>
<td>3</td>
</tr>
<tr>
<td>GNG 5125</td>
<td>Data Science Applications</td>
<td>3</td>
</tr>
<tr>
<td>GNG 5130</td>
<td>Business Communication and Influence</td>
<td>3</td>
</tr>
</tbody>
</table>

1. After completing the 12 units of mandatory compulsory courses and at least 6 units of optional courses, all students must register for the mandatory compulsory capstone 6 units course (EMP 6997) Engineering Management Project, which comprises applied research work of industrial relevance done in teams.

Minimum Requirements

Students who fail 6 units must withdraw from the 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

EMP 5100 Introduction to Engineering Management (3 units)
Introduction to management. The structure of engineering organizations. Planning and control in engineering management.
Course Component: Lecture

EMP 5101 Industrial Organization (3 units)
Course Component: Lecture
EMP 5100, EMP 5111, MBA 5241, MBA 5250, MBA 5235, ADM 6260 are corequisite to EMP 5101.

EMP 5102 Systems Engineering and Integration (3 units)
Course Component: Lecture
EMP 5100, EMP 5111, MBA 5241, MBA 5250, MBA 5235, ADM 6260 are corequisite to EMP 5102.

EMP 5103 Reliability, Quality and Safety Engineering (3 units)
Course Component: Lecture
EMP 5100, EMP 5111, MBA 5241, MBA 5250, MBA 5235, ADM 6260 are corequisite to EMP 5103.

EMP 5109 Topics in Engineering Management (3 units)
Current topics in industrial practice
Course Component: Lecture
Corequisite: EMP 5100, EMP 5111, MBA 5241, MBA 5250, MBA 5235, ADM 6260

EMP 5111 Creativity and Innovation (3 units)
Course Component: Lecture

EMP 5112 Tech. Policy and R. and D. Management (3 units)
Relationship between R & D and economic progress. Elements of the Canadian policy on technology; R & D activities in the private and public sectors; government incentives and support programs; comparison with the policies of other industrial countries. Technology planning and R & D management in a Canadian setting; technology forecasting, staffing, structure, strategy and support for R and D.
Course Component: Lecture
Prerequisite: MBA 5330. Courses EMP 5112, ADM 6263 or ADM 6264 cannot be combined for units.

EMP 5116 Issues in Management and Operation of Communication Networks (3 units)
Selected topics and emerging issues in management and operation of public and corporate communication networks: real-time and distributed systems; multimedia communications; integrated services network.
Course Component: Lecture
EMP 5100, EMP 5111, MBA 5241, MBA 5250, MBA 5235, ADM 6260 are corequisite to EMP 5116.

EMP 5117 Foundations of Software Engineering (3 units)
Foundations of software engineering for nonsoftware engineers;
basic principles of software engineering; practical laboratories and
programming examples using modern programming languages.
Course Component: Lecture
EMP 5100, EMP 5111, MBA 5241, MBA 5250, MBA 5235, ADM 6260 are
corequisite to EMP 5117. Experience with programming in at least one
common language over the last decade. Cannot count for units in CEG,
CSI and SEG programs.

EMP 5118 Technology Project Management Practice (3 units)
Technological project management process. Project team management
involving multiple technological and engineering experts. Configuration
management during project development. Coordination of outsourcing
in large multinational projects. Management of inprocess change of
technology.
Course Component: Lecture
EMP 5100, EMP 5111, MBA 5241, MBA 5250, MBA 5235, ADM 6260 are
corequisite to EMP 5118.

EMP 5119 Project Information Management (3 units)
Topics relating to the contractual relationship within the project team,
including the different types of contracts and their application, the
preparation of project documents, the evaluation of different types of
project organization structures and associated project delivery systems,
bidding strategies, network analysis using deterministic and stochastic
methods for time and cost management.
Course Component: Lecture
EMP 5100, EMP 5111, MBA 5241, MBA 5250, MBA 5235, ADM 6260 are
corequisite to EMP 5119.

EMP 5120 Product Development and Management (3 units)
Product development and management, including engineering aspects
of the process. The latest trends and practices, insight into processes
which facilitate product management and development, understanding
of product management and development practices via case studies,
development of the leadership and management skills required to create,
initiate, develop, bring to market and implement new technological
products and services.
Course Component: Lecture
EMP 5100, EMP 5111, MBA 5241, MBA 5250, MBA 5235, ADM 6260 are
corequisite to EMP 5120.

EMP 5121 Planning of Experiments in Engineering Design (3 units)
Taguchi/Plackett-Burman methods for design of experiments. Analysis
of means. Analysis of variance. Contrasts and multifactorial ANOVAs.
Fractional factorial designs. A-priori and posthoc pooling, scree plots.
Numerous application examples focused on engineering design.
Course Component: Lecture
EMP 5100, EMP 5111, MBA 5241, MBA 5250, MBA 5235, ADM 6260 are
corequisite to EMP 5121.

EMP 5122 Operational Excellence and Lean Six Sigma (3 units)
Lean Six Sigma Green Belt tools and techniques, operational efficiency,
and variability reduction, continuous improvement, the pursuit of
perfection. DMAIC (define, measure, analyze, improve and control),
process mapping, data collection and analysis, root cause problem
solving, the cost of quality, mistake proofing, change management.
Course Component: Lecture
The courses EMP 5122, GNG 5122 cannot be combined for credits.

EMP 5169 Advanced Topics in Reliability Engineering (3 units)
Overview of classical reliability concepts. Fault tree construction and
evaluation. Commoncause failure analysis of engineering systems.
Human reliability modelling in engineering systems. Human unreliability
data banks. Reliability of information and communication systems.
Course Component: Lecture
EMP 5100, EMP 5111, MBA 5241, MBA 5250, MBA 5235, ADM 6260 are
corequisite to EMP 5169.

EMP 5179 Manufacturing Systems Analysis (3 units)
Introduction to manufacturing systems. Manufacturing system selection
and cost justification. Analysis of manufacturing operations. Flexible
and agile manufacturing. Group technology and cellular manufacturing.
Transfer line and assembly line systems. Analysis of material transport
and storage systems. Manufacturing Process Planning. Tolerance
analysis and Taguchi methods. Design for manufacturing and assembly.
Just-in-time production. Quality function deployment.
Course Component: Lecture
EMP 5100, EMP 5111, MBA 5241, MBA 5250, MBA 5235, ADM 6260 are
corequisite to EMP 5179.

EMP 5910 Études dirigées / Directed Studies (3 crédits / 3 units)
Étude approfondie dans un domaine de la gestion en ingénierie sous la
supervision d'un professeur et donnant lieu à un rapport écrit. / Advanced
study in an area of engineering management under the supervision of a
professor and leading to a written report.
Volet / Course Component: Recherche / Research
Permission du Département est requise. / Permission of the Department
is required.

EMP 6997 Projet majeur en consultation / Major Consulting Project (6
crédits / 6 units)
Projet obligatoire de 6 unités réalisé par équipes. Projet majeur de
recherché appliquée visant à apporter une solution à un problème
de gestion de l'ingénierie proposé par une organisation (compagnie
privée, université ou entreprise en démarrage). Supervisé par un
professeur, approuvé par le directeur de programme, requiert une
proposition de projet, un rapport d'étape de recherche et d'analyse,
une présentation finale et un rapport final incluant des recommandations.
Noté S (satisfaisant) ou NS (non satisfaisant) par le superviseur et
le représentant du client. / Compulsory 6 units team-based major
applied research project to address a specific engineering management
challenge posed by an organizational client (e.g., private company,
university or incubator start-up). Supervised by a professor, approved
by the program director, requiring a project proposal, an interim
research and analysis report, a final presentation and a final report with
recommendations. Graded S (satisfactory) or NS (not satisfactory) by
both the supervisor and the client’s representative.
Volet / Course Component: Recherche / Research
Prerequisite: EMP 5100, EMP 5111, MBA 5241, MBA 5250, MBA 5235,
ADM 6260, and a further 6 units of program courses.