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
• 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 (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/)
STE 1024
800 King Edward Ave.
Ottawa ON Canada
K1N 6N5
Tel.: 613-562-5347
Fax.: 613-562-5129
Email: engineering.grad@uottawa.ca

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:

• 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.

Students must meet the following requirements:

- successfully complete 30 course units.
- To receive this Master's degree, a student enrolled in the program must take management-content courses.
- These courses comprise 6 units of engineering-content courses and 6 units of engineering-focused projects and operations. Mandatory core courses provide core principles pertaining to the ADM, MBA courses (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.

1.5 Units
2
3 Units

### 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 these courses.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>ADM 6261</td>
<td>Project Management II</td>
<td>1.5</td>
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<tr>
<td>ADM 6277</td>
<td>E-Business Energy Management</td>
<td>1.5</td>
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<tr>
<td>ADM 6286</td>
<td>International E-Business Strategies for DTI</td>
<td>1.5</td>
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<tr>
<td>ADM 6287</td>
<td>Business Intelligence Technologies and Big Data Analytics for DTI</td>
<td>1.5</td>
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<tr>
<td>ADM 6420</td>
<td>Digital Marketing</td>
<td>1.5</td>
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<tr>
<td>EMP 5101</td>
<td>Industrial Organization</td>
<td>3</td>
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<tr>
<td>EMP 5102</td>
<td>Systems Engineering and Integration</td>
<td>3</td>
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<tr>
<td>EMP 5103</td>
<td>Reliability, Quality and Safety Engineering</td>
<td>3</td>
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<tr>
<td>EMP 5109</td>
<td>Topics in Engineering Management</td>
<td>3</td>
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<tr>
<td>EMP 5116</td>
<td>Issues in Management and Operation of Communication Networks</td>
<td>3</td>
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<tr>
<td>EMP 5117</td>
<td>Foundations of Software Engineering</td>
<td>3</td>
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<tr>
<td>EMP 5118</td>
<td>Technology Project Management Practice</td>
<td>3</td>
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<td>EMP 5119</td>
<td>Project Information Management</td>
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<tr>
<td>EMP 5120</td>
<td>Product Development and Management</td>
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<td>EMP 5121</td>
<td>Taguchi methods for efficient Engineering RD</td>
<td>3</td>
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<td>EMP 5122</td>
<td>Operational Excellence and Lean Six Sigma</td>
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<td>EMP 5169</td>
<td>Advanced Topics in Reliability Engineering</td>
<td>3</td>
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<tr>
<td>EMP 5179</td>
<td>Manufacturing Systems Analysis</td>
<td>3</td>
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<td>EMP 5320</td>
<td>Marketing</td>
<td>3</td>
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<tr>
<td>EMP 5330</td>
<td>Managing Talent Organizations</td>
<td>3</td>
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<tr>
<td>EMP 5910</td>
<td>Directed Studies</td>
<td>3</td>
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<tr>
<td>GNG 5120</td>
<td>Technology entrepreneurship for Engineers and Computer Scientists</td>
<td>3</td>
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<tr>
<td>GNG 5123</td>
<td>Enterprise Architecture</td>
<td>3</td>
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<td>GNG 5124</td>
<td>Internet Technologies and Mobile Commerce</td>
<td>3</td>
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<td>GNG 5125</td>
<td>Data Science Applications</td>
<td>3</td>
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<td>GNG 5130</td>
<td>Communication and Influence for Engineers</td>
<td>3</td>
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<td>GNG 5131</td>
<td>Sales and Influence for Engineers</td>
<td>3</td>
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<td>GNG 5140</td>
<td>Engineering Design</td>
<td>3</td>
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<tr>
<td>GNG 5301</td>
<td>Professional Skills and Responsibility</td>
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<td>GNG 5300</td>
<td>Topics in Engineering</td>
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<tr>
<td>GNG 5310</td>
<td>Topics in Industry Practice</td>
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<tr>
<td>GNG 5901</td>
<td>Industry Internship</td>
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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)
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 Taguchi methods for efficient Engineering R&D (3 units)
Two-level statistical experimental methods as applied to engineering design; analysis of means, analysis of variance, contrasts, multifactorial analysis of variance, fractional factorial design, screening designs, product variation and an introduction to the Taguchi approach.
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, waste 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)
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)
Course Component: Lecture
EMP 5100, EMP 5111, MBA 5241, MBA 5250, MBA 5235, ADM 6260 are corequisite to EMP 5179.

EMP 5235 Leadership Skills (1.5 unit)
Course Component: Lecture
The courses EMP 5235, MBA 5235 cannot be combined for units.

EMP 5241 Management Accounting (1.5 unit)
This course focuses on the role of the accounting function internal to the organization. It takes a broad view of managerial accounting, introducing students to various costing systems, cost behaviour patterns and cost structures. It demonstrates the use of accounting for the evaluation of product, managerial and divisional performance thus helping students to understand what accounting can do for decision makers and how accounting choices affect decisions. Emphasis on the strategic importance of aligning accounting systems with firm technologies and goals. Current issues in management accounting and internal reporting are discussed.
Course Component: Lecture
The courses EMP 5241, MBA 5241 cannot be combined for units.

EMP 5250 Introduction to Corporate Finance (1.5 unit)
Course Component: Lecture
The courses EMP 5250, MBA 5250 cannot be combined for units.

EMP 5320 Marketing (3 units)
Principles of market-driven managerial decision making: consumer, competitor, and company analysis, market segmentation, definition of target markets, and product positioning. Management of marketing function: product and pricing decisions, channels of distribution, marketing communications. Marketing as creating customer value and benefits to the organization and its stakeholders.
Course Component: Lecture
The courses EMP 5320, MBA 5320 cannot be combined for units.

EMP 5330 Managing Talent & Organizations (3 units)
The strategic advantage of designing effective organizations and talent management systems to achieve organizational outcomes. Topics include: job performance, organizational commitment, thriving workplaces, motivation, and team dynamics. Talent management processes to acquire, develop, and engage employees. Equity, diversity, and inclusion. Organizational culture, power and politics, and current topics related to talent management.
Course Component: Lecture
The courses EMP 5330, MBA 5330 cannot be combined for units.
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 6277 E-Business Energy Management (1.5 unit)
Reduction of e-business power requirements by locating data centres in areas with low cost electricity and where cold outside air can be used for cooling, e.g. British Columbia, Québec, Finland, Iceland and Sweden. Reduction of power requirements in other industries, e.g. using smart grid, smart buildings and smart cities. Calculation of energy requirements for specific e-business services, e.g. e-banking, e-newspapers, media download, media streaming and web-based advertising. Review of current international standardization work on sustainability for and by IT.

Course Component: Lecture
The courses ADM 6277, EMP 6277 cannot be combined for units.

EMP 6362 Project Management (3 units)
Introduction to project management. Project life cycle management overview (initiation, planning, execution, monitoring and control, and closure). Basic project management concepts, approaches, methods, tools and techniques. Topics covered include: identifying project needs and objectives; aligning projects with organizational strategy; managing stakeholder expectations; writing the project charter and the project plan; delivering projects; monitoring and control; understanding and measuring project success, delivering long-term and sustainable impacts.

Course Component: Lecture
The courses MBA 6362, EMP 6362 cannot be combined for units.