Graduate Diploma in Engineering Management

Summary
- Degree offered: Graduate Diploma
- Registration status options: Full-time; Part-time
- Language of instruction: English
- Program option (expected duration of the program):
  - within one year
- Academic units: Faculty of Engineering (https://engineering.uottawa.ca/), Telfer School of Management (http://www.telfer.uottawa.ca/en/)

Program Description
The graduate diploma is awarded upon successful completion of 15 units.

Other Programs Offered Within the Same Discipline or in a Related Area
- Master of Engineering Engineering Management (MEng)

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 in engineering or science with a minimum 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.

Language tests recognized by the University of Ottawa:
- TOEFL: 550 (paper-based) or 79-80 (internet-based); or
- IELTS: Overall 6.5 – Individual 5.0 (paper-based or internet-based); or
- An equivalent language test (http://www.uottawa.ca/graduate-studies/programs-admission/apply/required-documents/).

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. Preference will be given to candidates who have a few years of full-time experience in engineering or a related field as well as a high level of proficiency in the English language.
- A maximum of three units in equivalencies or advanced standing may be granted. To be eligible, the units in question must not have been counted towards the requirements of a previous diploma or degree. Candidates who have already successfully completed some of the compulsory units may be allowed to replace those units with elective units. For details, see section B.2.7. of the general regulations.

Documents Required for Admission
In addition to the documents required (http://www.uottawa.ca/graduate-studies/programs-admission/apply/required-documents/) for graduate
Students are strongly encouraged to attend a seminar series to be offered in a variety of topics including: Continuous Risk Management, IT Procurement, and Software Rollout.

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>ADM 6260</td>
<td>Project Management I</td>
<td>1.5</td>
</tr>
<tr>
<td>EMP 5100</td>
<td>Introduction to Engineering Management</td>
<td>3</td>
</tr>
<tr>
<td>EMP 5111</td>
<td>Creativity and Innovation</td>
<td>3</td>
</tr>
<tr>
<td>MBA 5235</td>
<td>Management Skills I</td>
<td>1.5</td>
</tr>
<tr>
<td>MBA 5241</td>
<td>Managerial Accounting Information and Decisions</td>
<td>1.5</td>
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<tr>
<td>MBA 5250</td>
<td>Introduction to Corporate Finance</td>
<td>1.5</td>
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</table>

**Optional 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>3</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 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>1.5</td>
</tr>
<tr>
<td>EMP 5102</td>
<td>Systems Engineering and Integration</td>
<td>1.5</td>
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<tr>
<td>EMP 5103</td>
<td>Reliability, Quality and Safety Engineering</td>
<td>1.5</td>
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<tr>
<td>EMP 5109</td>
<td>Topics in Engineering Management</td>
<td>1.5</td>
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<tr>
<td>EMP 5116</td>
<td>Issues in Management and Operation of Communication Networks</td>
<td>1.5</td>
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<tr>
<td>EMP 5117</td>
<td>Foundations of Software Engineering</td>
<td>1.5</td>
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<tr>
<td>EMP 5119</td>
<td>Project Information Management</td>
<td>1.5</td>
</tr>
<tr>
<td>EMP 5120</td>
<td>Product Development and Management</td>
<td>1.5</td>
</tr>
<tr>
<td>EMP 5121</td>
<td>Planning of Experiments in Engineering Design</td>
<td>1.5</td>
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<tr>
<td>EMP 5169</td>
<td>Advanced Topics in Reliability Engineering</td>
<td>1.5</td>
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<tr>
<td>EMP 5172</td>
<td>Operational Excellence and Lean Six Sigma</td>
<td>1.5</td>
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<tr>
<td>EMP 5179</td>
<td>Manufacturing Systems Analysis</td>
<td>1.5</td>
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<tr>
<td>EMP 5910</td>
<td>Directed Studies</td>
<td>1.5</td>
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<tr>
<td>GNG 5120</td>
<td>Technology entrepreneurship for Engineers and Computer Scientists</td>
<td>1.5</td>
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<tr>
<td>GNG 5124</td>
<td>Internet Technologies and Mobile Commerce</td>
<td>1.5</td>
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<tr>
<td>MBA 5270</td>
<td>Knowledge and Information Management</td>
<td>1.5</td>
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<tr>
<td>MBA 5320</td>
<td>Strategic Marketing Management</td>
<td>1.5</td>
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<tr>
<td>MBA 5330</td>
<td>Organization Behaviour and Human Resources Management</td>
<td>1.5</td>
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Note(s):

1. Compulsory core courses provide core principles pertaining to the analysis, planning, organization, funding and successful implementation of engineering-focused projects and operations. Mandatory core courses comprise 6 units of engineering-content courses and 6 units of management-content courses.
Optional courses enable students to develop knowledge and skills in an area of interest. 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.

**Minimum Requirements**

Failure in 6 units leads to withdrawal 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**

**ADM 6250 Project Management I (1.5 unit)**

Project management methods based on standards, including the Guide to Project Management Body of Knowledge (PMBOK) of the Project Management Institute (PMI); project success and stakeholders; project charter and project plan; managing a project throughout its life cycle (identification, design, planning, realization and close-out). Students will have hands-on experience using MS Project.

**Course Component:** Lecture

**ADM 6261 Project Management II (1.5 unit)**

Focus on projects that have incomplete and/or unstable requirements such as IT projects or software development projects. Topics covered include: portfolio management; risk management; determining requirements and solutions; quality management; communication management; design methods (Quality Function Deployment, Value Analysis); iterative and adaptive project management; fast tracking and concurrent methods of project management.

**Course Component:** Lecture

**ADM 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

**ADM 6286 International E-Business Strategies for DTI (1.5 unit)**

International trends in the global economy together with assessment of risks, and associated international e-business opportunities. Strategies for translating international opportunities into e-businesses, including localizing international web-based content, developing international supply networks, international crowdsourcing, international payments and international collaboration. How to address local laws on privacy, intellectual property and business contracts. Courses ADM 6274, ADM 6286 cannot be combined for units.

**Course Component:** Lecture

**Exclusion:** ADM 6274

**ADM 6287 Business Intelligence Technologies and Big Data Analytics for DTI (1.5 unit)**

Business Intelligence (BI) as a concept; review of major BI tools and methods; identification of the right types of BI for different types of decision making environments; introduction to Big Data; business applications of Big Data; review of the supporting technologies such as data bases and data warehouses and Big Data Platforms for integrating structured and unstructured data including Hadoop, sandbox analytics; Streaming Analytics, and advances in data warehousing appliances that accelerate analytics. Courses ADM 6275, ADM 6287 cannot be combined for units.

**Course Component:** Lecture

**Exclusion:** ADM 6275

**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

**ADM 6420 Digital Marketing (1.5 unit)**


**Course Component:** Lecture
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)
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.

GNG 5124 Internet Technologies and Mobile Commerce (3 units)
An examination of current Internet technologies, protocols and wired and wireless infrastructures. Analysis of current Internet-based businesses and consumer applications and services. Discussion of mobile commerce business models and strategies and their relevant technologies. Hands-on experience with discussed technologies and applications. Students will complete a project demonstrating and analyzing how an Internet-based application or service could be applied in their field of graduate study.
Course Component: Lecture
The courses DTI 5124, GNG 5124 cannot be combined for units.

MBA 5241 Managerial Accounting Information and Decisions (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

MBA 5250 Introduction to Corporate Finance (1.5 unit)
Course Component: Lecture
Prerequisite: MBA 5340

MBA 5270 Knowledge and Information Management (1.5 unit)
Role of information in organizations. Overview of systems used to capture, transform and disseminate information to managers. Linkages between information and knowledge management. The process of knowledge creation and application within and among organizations.
Course Component: Lecture

MBA 5320 Strategic Marketing Management (3 units)
Overview of the Marketing process: key concepts, tools and procedures, in the context of a technology-intensive global economy. Definition of Marketing, the Marketing Concept and Marketing Management, and the significance of operating in a technology-intensive global economy. Analyzing market opportunities, setting performance goals, formulating marketing and implementation plans to meet those goals. Introduction to e-marketing management and some of the e-marketing tools available. MBA 5120 and MBA 5125, together, are equivalent to MBA 5320.
Course Component: Lecture

MBA 5330 Organization Behaviour and Human Resources Management (3 units)
The strategic advantage of understanding and integrating organizational behaviour (OB) frameworks in designing and implementing effective human resource (HR) activities (namely attraction, development, maintenance and retention of employees), in measuring performance and in achieving high-performance outcomes in various global organizational contexts. OB topics covered include motivation, rewards, leadership, group dynamics, organizational politics, job and organization design, and culture.
Course Component: Lecture
Prerequisite: MBA 5235 for MBA students only. MBA 5131 and MBA 5132, together, are equivalent to MBA 5330.