Master of Science Electronic Business Technologies

Summary
- Degree offered: Master of Science (MSc)
- Registration status options: Full-time; Part-time
- Language of instruction: English
- Program options (expected duration of the program):
  - with thesis (4 full-time terms; 16 consecutive months)
  - with thesis and co-op (4 full-time terms; 2 work terms)
- Academic units: Faculty of Engineering (http://engineering.uottawa.ca), School of Electrical Engineering and Computer Science (EECS) (http://engineering.uottawa.ca/eecs).

Program Description
Electronic Business Technologies focuses on the integration of information technologies with business processes and strategies within a dynamic legal and business environment. At the base of Electronic Business Technologies is the fact that the application of Internet and information technology to business processes leads to remarkable new ways of conceiving and organizing businesses. This in turn leads to a myriad of innovative modes of management, new organisational structures and information architectures as well as new laws and legal and corporate strategies.

Main Areas of Research
- Electronic Business
  Electronic Business focuses on organizational transformations based on information technologies. Research includes:
  - The identification of best practices and trends.
  - The comparative analysis of new business models.
  - The evaluation of performance based on the introduction of new technologies.
  - The efficacy of the new services and methods in attracting and satisfying customers.
  - The simulation of integrated supply chains.
- Electronic Technologies
  Electronic Technologies focuses on information technologies and system architectures, which are used to create and manage on-line commercial transactions. Research includes:
  - Electronic commerce technologies and protocols (in particular wireless and multi-media).
  - The analysis and development of algorithms and theories (in particular security, data mining, web data warehouses, and distributed applications).
  - The definition of standards, architectures and software engineering methodologies for developing electronic commerce systems.
  - The experimental development of innovative applications (virtual environments, e-learning, personalization, electronic negotiations, business reporting, legislative compliance, and health care).

Other Programs Offered Within the Same Discipline or in a Related Area
- Master of Electronic Business Technologies (MEBT)
- Doctorate in Philosophy Electronic Business (PhD)

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 (http://engineering.uottawa.ca/about/programs/graduate)
161 Louis-Pasteur, Colonel By Hall, Room B111
Ottawa, Ontario, Canada
K1N 6N5

Tel.: 613-562-5347
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 (http://www.uottawa.ca/graduate-studies/programs-admission/apply/specific-requirements) webpage.

To be eligible, candidates must:
- Hold a bachelor’s degree with honours in a discipline relevant to the stream chosen, either e-business or e-technologies, with a minimum average of B+ (75%).
- 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.
- For the e-business stream, disciplines such as business administration, economics, computer science, electrical engineering, and business information are particularly relevant.
- For the e-technologies stream, disciplines such as computer science, computer engineering, software engineering, electrical engineering, and business information are particularly relevant and, for this stream, the degree program must have included courses in data structures, file management, operating systems, database management systems, and systems programming.
- Identify at least one professor who is willing to supervise your research and thesis. We recommend that you contact potential thesis supervisors as soon as possible.

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 through one of the following two requirements or one of the language tests below.
- Proof of completion within the last five years, of a previous degree program in an English language university.
- Proof of recent prolonged residence and exercise of a profession in an English speaking country (normally at least four years over the last six years).

Language tests recognized by the University of Ottawa:
- TOEFL: minimum score of 600 (paper-based) with a minimum score of 5 on the written and 50 on the spoken or a minimum score of 100 (internet-based);
- IELTS: minimum score of 7 for 3 of the 4 tests (Reading, Listening, Writing, Speaking) and a minimum score of 6 in the fourth test;
- CANTEST: minimum score of 14 with an individual minimum score of 4.0 and a minimum score of 4.5 on the oral component;
- An equivalent language test (http://www.uottawa.ca/graduate-studies/programs-admission/apply/required-documents).

Notes:
- Candidates are responsible for any fees associated with the language tests.
- Test scores cannot be more than two years old as of September 1 of the year of potential entry into the program.

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.

Applying to the Co-op Option
In order to apply to the co-op option, you must first be admitted to a program that offers co-op.

Your application must be submitted by the end of the first month of enrollment in your primary program, i.e., by the end of September.

Admission to the co-op option occurs on a competitive basis and is managed by the Co-op Office (https://coop.uottawa.ca/en). Enquiries should be directed to that office.

To be admitted to the co-op option, you must:
- Be enrolled as a full-time student in the master’s in Electronic Business Technologies.
- Have and maintain a minimum CGPA of 7.0 (B+ or 75%) in courses taken at the University of Ottawa.
• Begin the program in the Fall term.
• Be a Canadian citizen or permanent resident.
• Pay the required co-op fees.

Program Requirements

Master’s with Thesis - Electronic Business Technologies Stream

Students must meet the following requirements:

<table>
<thead>
<tr>
<th>Compulsory Courses:</th>
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<tbody>
<tr>
<td>ADM 6277</td>
<td>E-Business Energy Management</td>
</tr>
<tr>
<td>ADM 6287</td>
<td>Business Intelligence Technologies and Big Data Analytics for EBT</td>
</tr>
<tr>
<td>EBC 6130</td>
<td>Web Services</td>
</tr>
<tr>
<td>EBC 6170</td>
<td>Internet Security</td>
</tr>
<tr>
<td>EBC 6220</td>
<td>Data Mining for Business Applications</td>
</tr>
<tr>
<td>EBC 6260</td>
<td>Integrated Networks for the Enterprise</td>
</tr>
<tr>
<td>EBC 7101</td>
<td>Research Workshop in Electronic Business Technologies</td>
</tr>
<tr>
<td>EBC 7102</td>
<td>Interdisciplinary Research Methods in E-Business</td>
</tr>
<tr>
<td>ISI 5310</td>
<td>Ethics, Values and Information Dilemmas</td>
</tr>
</tbody>
</table>

3 optional course units from the list of optional courses 3 Units

**Thesis Proposal:**

| EBC 7990 | Thesis proposal | 0 Unit |

**Thesis:**

| THM 7999 | Master’s Thesis | 0 Unit |

**Note(s):**

1 Under special circumstances, students may be allowed to substitute CMN 5115 for ISI 5310 with the approval of the EBT Director and the professor for CMN 5115.

2 Students are responsible for ensuring they have met all of the thesis requirements (http://www.uottawa.ca/graduate-studies/students/theses).

List of Optional Courses

The following courses can be taken as optional courses in any of the programs above:

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<tr>
<td>ADM 6276</td>
<td>Enterprise Resource Planning Systems Management</td>
</tr>
<tr>
<td>ADM 6279</td>
<td>Socio-Technical Change</td>
</tr>
<tr>
<td>ADM 6286</td>
<td>International E-Business Strategies for EBT</td>
</tr>
<tr>
<td>ADM 6420</td>
<td>Electronic Marketing</td>
</tr>
<tr>
<td>ADM 6260</td>
<td>Project Management I</td>
</tr>
<tr>
<td>ADM 6261</td>
<td>Project Management II</td>
</tr>
<tr>
<td>CMN 5110</td>
<td>Social History of Communication Technologies</td>
</tr>
<tr>
<td>CMN 5140</td>
<td>Communication, Globalization and Change</td>
</tr>
<tr>
<td>CMN 5150</td>
<td>Knowledge Management</td>
</tr>
<tr>
<td>CSI 5105</td>
<td>Network Security and Cryptography</td>
</tr>
<tr>
<td>CSI 5111</td>
<td>Software Quality Engineering</td>
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<tr>
<td>CSI 5112</td>
<td>Software Engineering</td>
</tr>
<tr>
<td>CSI 5115</td>
<td>Database Analysis and Design</td>
</tr>
<tr>
<td>CSI 5118</td>
<td>Automated Verification and Validation of Software</td>
</tr>
<tr>
<td>CSI 5122</td>
<td>Software Usability</td>
</tr>
<tr>
<td>CSI 5180</td>
<td>Topics in Artificial Intelligence</td>
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<td>CSI 5366</td>
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<td>EBC 6240</td>
<td>Mobile Commerce</td>
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<tr>
<td>EBC 6250</td>
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Master’s with Thesis - Electronic Technologies Stream

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EBC 6260 Integrated Networks for the Enterprise 1.5 Units
ELG 5121 Multimedia Communications 3 Units
ELG 5373 Data Encryption 3 Units
EMP 5116 Issues in Management and Operation of Communication Networks 3 Units
GNG 5120 Technology entrepreneurship for Engineers and Computer Scientists 3 Units
GNG 5121 Planning of Experiments in Engineering Design 3 Units
GNG 5122 Operational Excellence and Lean Six Sigma 3 Units
GNG 5124 Internet Technologies and Mobile Commerce 3 Units
ISI 6312 Global Information and Communications Policy 3 Units
ISI 6322 Digital Preservation 3 Units
ISI 6332 Metadata and Taxonomy 3 Units
ISI 6342 Web Architecture and Technologies 3 Units
ISI 6343 Digital Asset Management Technologies 3 Units
ISI 6351 Social Media 3 Units
ISI 6372 Information Literacy 3 Units
ISI 6381 Knowledge in Organizations 3 Units
MBA 5270 Knowledge and Information Management 1.5 Units
MBA 6220 Managing Customer Relations and the Sales Process 1.5 Units
MGT 6111 Venture Capital and Private Equity 3 Units
MHA 6271 Technology As An Instrument of Change in Health Care 1.5 Units
POP 8950 Special Topics in Population Health 3 Units

Co-op Option
Co-op students must enroll full-time and complete two work terms: CGI 6001 and CGI 6002.

Each work term is graded P/F (Pass/Fail), based on the employer’s report and on the written report completed by the student (the student report should be 30 pages long, including annexes). The report is evaluated by the professor in charge of the graduate co-op option in Electronic Business Technologies. The units awarded for co-op terms may not be used to obtain equivalences for other courses. In other words, the co-op units are additional to the minimum requirements of the degree.

To remain enrolled in the co-op option, students must:

• Maintain full-time status.
• Maintain a 7.0 grade point average.
• Obtain a satisfactory grade (P) for each co-op work term.

Minimum Requirements
The passing grade in all courses is C+.

Students who fail 4.5 units, or the same course twice, must withdraw from the program.

Fast-Track from Master’s to PhD
Students enrolled in the MSc program in E-Business Technologies at the University of Ottawa may be eligible to fast-track directly into the doctoral program without writing a master’s thesis. For additional information, please consult the “Admission Requirements” section of the PhD 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
EBC 5100 Introductory Seminar (1.5 unit)
Course Component: Lecture

EBC 5175 Mobile Commerce Technologies (3 units)
Course Component: Lecture
Exclusion: CSI 5175
EBC 5380 Systems and Architectures for Electronic Commerce (3 units)
Content and transactions in e-commerce systems. System architecture with a focus on frameworks, tools and development process. Application frameworks. Information management. Security, standards, and regulatory compliance. Current research issues. Hands-on experience with an integrated set of current e-commerce tools. E-commerce development project. Courses EBC 5380, CSI 5380 cannot be combined for units. This course is equivalent to COMP 5401 at Carleton University.
Course Component: Lecture
Exclusion: CSI 5380

EBC 5389 Electronic Commerce Technologies (3 units)
Introduction to business models and technologies. Search engines. Cryptography. Web services and agents. Secure electronic transactions. Value added e-commerce technologies. Advanced research questions. Courses EBC 5389, CSI 5389 cannot be combined for units. This course is equivalent to COMP 5401 at Carleton University.
Course Component: Lecture
Exclusion: CSI5380

EBC 5500 Séminaire d’introduction (1.5 crédit)
Volet : Cours magistral

EBC 5501 Fondements de gestion pour les affaires électroniques (3 crédits)
Volet : Cours magistral
Permission of the Department is required.

EBC 5502 Fondements des technologies de l’information pour les affaires électroniques (3 crédits)
Volet : Cours magistral
Permission of the Department is required.

EBC 5503 Fondements des statistiques pour les affaires électroniques (3 crédits)
Volet : Cours magistral
Permission of the Department is required.

EBC 5990 Étude dirigée / Directed Readings (1.5 crédit / 1.5 unit)
Étude indépendante, sous la direction d’un professeur membre du programme. Le sujet et les exigences doivent être approuvés par le comité du programme. / Independent study under the supervision of a faculty member in the program. The topic and requirements must be approved by the program committee.
Volet / Course Component: Recherche / Research
Préalable : MPC d’au moins 7. / Prerequisite: CGPA of at least 7.

EBC 5991 Étude dirigée / Directed Readings (1.5 crédit / 1.5 unit)
Étude indépendante, sous la direction d’un professeur membre du programme. Le sujet et les exigences doivent être approuvés par le comité du programme. / Independent study under the supervision of a faculty member in the program. The topic and requirements must be approved by the program committee.
Volet / Course Component: Recherche / Research
Préalable : MPC d’au moins 7. Permission du Département est requise. / Préalable : MPC d’au moins 7. Permission of the Department is required.

EBC 6130 Web Services (1.5 unit)
Web services business models and strategies. Enterprise Application Integration and Service Oriented Architectures. Web services technology standards. Consumer and enterprise adoption of web service technologies and platforms such as Mashups and Cloud Computing.
Course Component: Lecture

EBC 6170 Internet Security (1.5 unit)
User, data and network security principles. Information systems security standards. Security risk analysis frameworks. Fundamentals of Internet security mechanisms including authentication, access control, data encryption and integrity, and Public Key Infrastructure. Internet security including security in the wireless environment. Payment card industry security standards and compliance.
Course Component: Lecture

EBC 6180 Electronic Human Resources Management (1.5 unit)
The human resource functions needed for technology. Recruitment and selection via the internet. Internet and intranet applications for training personnel and enabling self-management. Measurement and management of employee performance using web-based applications. Using the web to maximize knowledge acquisition and sharing among employees. Knowing when and when not to use technology to effectively manage human resources.
Course Component: Lecture

EBC 6210 Electronic Commerce Architecture (1.5 unit)
Course Component: Lecture

EBC 6220 Data Mining for Business Applications (1.5 unit)
Introduction to business data collection, data pre-processing, data warehouses, data marts, and online analytical processing. Data mining tasks including classification, clustering and association rules. Data mining model building, tools and techniques including decision trees, neural networks, and regression analysis. Application of these techniques in business including CRM, target marketing, credit scoring, churn, survival analysis, and fraud detection.
Course Component: Lecture

EBC 6230 Business Process Management Technologies and Applications (1.5 unit)
Introduction to Business Process Management Technologies. Review of the latest concepts for using technology to improve performance of business processes. Analysis of advances in Internet-enabled B2B and enterprise business models with emphasis on service-oriented and event-driven architecture. Example applications from supply chain management, order processing, and health care process management will be studied.
Course Component: Lecture
EBC 6240 Mobile Commerce (1.5 unit)
Course Component: Lecture

EBC 6250 Document Engineering for E-Business (1.5 unit)
Course Component: Lecture

EBC 6260 Integrated Networks for the Enterprise (1.5 unit)
Course Component: Lecture

EBC 6900 Stage international / International Work Term (3 crédits / 3 units)
Expérience pratique dans un milieu de travail international. Noté S (satisfaisant) / NS (non satisfaisant) selon les résultats de rapport écrit et l'évaluation de l'employeur. Les cours EBC 6900, CSI 5903, CSI 5904 ne peuvent être combinés pour l'obtention de crédits. / Practical international experience. Graded S (Satisfactory) / NS (Not satisfactory), based on the written report as well as on the evaluations of the employer. Courses EBC 6900,CSI 5903,CSI 5904 cannot be combined for units.
Volet / Course Component: Cours magistral / Lecture
Courses EBC 6900, CSI 5903, CSI 5904 cannot be combined for units. Permission of the Department is required.

EBC 6950 Lectures dirigées / Directed Readings (1.5 crédit / 1.5 unit)
Course Component: Cours magistral / Lecture

EBC 6997 Projet de recherche / Research project (6 crédits / 6 units)
Le sujet de recherche, ainsi que le professeur qui va le diriger, doivent être approuvés par la direction du programme avant l’inscription à la troisième session. Le sujet peut être de nature théorique (par exemple, une évaluation de la documentation ou une étude de la littérature scientifique) ou appliqué (par exemple, des études de cas). Un mémoire, d’une cinquantaine de pages, doit être rédigé et approuvé par le professeur qui le dirige ainsi qu’un autre professeur. / The research topic and the professor who will direct it must be approved by the program director prior to registration in the third session. The topic can be theoretical (for instance, based on a documentation assessment or a review of the scientific literature) or applied (based on case studies). A research paper, about 50 pages long, must be written and approved by the project director and another professor.
Volet / Course Component: Recherche / Research

EBC 7100 Research Methods in Electronic Business Technologies (3 units)
Course Component: Lecture

EBC 7101 Research Workshop in Electronic Business Technologies (1.5 unit)
Writing a Research Project proposal including problem formulation and work plan. Essentials of graduate report writing, information management, literature search techniques and reference management. Research ethics including academic integrity and avoiding academic fraud.
Course Component: Lecture

EBC 7102 Interdisciplinary Research Methods in E-Business (1.5 unit)
Writing a Thesis Proposal. Research design. Introduction to positivist and interpretive approaches, behavioural and design science research, qualitative and quantitative research methods, and sampling strategies and techniques.
Course Component: Lecture
Prerequisite: EBC 7101

EBC 7990 Proposition de thèse / Thesis proposal
Volet / Course Component: Recherche / Research

EBC 8101 Interdisciplinary Doctoral Seminar in E-Business I (3 units)
Recent developments in e-Business applications and research. Critical analysis of theories, models, and methods. Critical synthesis of the field literature from different perspectives. Students will write a systematic survey paper of the literature relevant to their research in one of the three fields of the program. The paper must be in a different field from that selected for the paper in EBC 8102. Course reserved for students in the EBC PhD program.
Course Component: Seminar

EBC 8102 Interdisciplinary Doctoral Seminar in E-Business II (3 units)
Recent developments in e-Business applications and research. Critical analysis of theories, models, and methods. Critical synthesis of the field literature from different perspectives. Students will write a systematic survey paper of the literature relevant to their research in one of the three fields of the program. The paper must be in a different field from that selected for the paper in EBC 8101. Course reserved for students in the EBC PhD program.
Course Component: Lecture
Prerequisite: EBC 8101.

EBC 9997 Projet de thèse / Thesis proposal
Projet de thèse / Thesis proposal
Volet / Course Component: Recherche / Research
Préalable : EBC 9998 / Prerequisite: EBC 9998

EBC 9998 Examen général de doctorat / Comprehensive Exam
Volet / Course Component: Recherche / Research