DOCTORATE IN PHILOSOPHY ELECTRONIC BUSINESS

Summary

- Degree offered: Doctorate in Philosophy (PhD)
- Registration status options: Full-time
- Language of instruction:
  - English
- Program option (expected duration of the program):
  - within four years
- 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).
- **Electronic Society**

Note: Information on the fields and research interests of the professors is posted on the program website. (http://quickforms3.eecs.uottawa.ca/ebt-rp)

Other Programs Offered Within the Same Discipline or in a Related Area

- Master of Science Electronic Business Technologies (MSc)
- Master of Electronic Business Technologies (MEBT)

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

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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:

- Hold a master's degree with thesis and a minimum average of A- in one of the following:
  - MSc in e-Business Technologies, in Management, in Health Systems, or in Systems Science;
  - MASc in Electrical and Computer Engineering;
  - Master of Computer Science;
  - Master of Information Studies;
  - MA in Communication;
  - A master's in a related, relevant discipline.
- 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.
- Exceptionally, applicants holding a master's degree without thesis may be considered provided their file includes scholarly publications or equivalent evidence of their capacity for advanced research.
- Identify at least one professor in the program whose research interests correspond to yours and who is willing to supervise your research and thesis. We recommend that you contact potential thesis supervisors as soon as possible.
- Meet the following additional coursework requirements set by the Admissions Committee:
  - Students whose master's degree was in an area other than Electronic Business Technologies may be required to take up to 12 units of additional courses beyond the 9 units normally required for the PhD. The additional coursework would consist of the following:
    - EBC 7100, or an equivalent course.
    - At least one course (3 units) in a field other than the candidate's chosen field of research, to be chosen from the list of field designated courses in the program.
    - The additional coursework is defined by the Admissions Committee, in consultation with the potential supervisor and the Graduate Studies Committee, and is specified in the student's letter of admission.

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 version) or 100 (internet version) with a minimum score of 5 on the written and 50 on the spoken; or

- 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; or
- CANTEST minimum score of 14 with an individual minimum score of 4.0 and a minimum score of 4.5 on the oral component; 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.

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, provided the following conditions are met:

- Completion of 21 units of core MSc courses with a minimum average of 8.5;
- Satisfactory progress in the research program;
- Submission and successful defence of a well-developed research proposal;
- Written recommendation from the proposed PhD thesis supervisor (and co-supervisor if applicable) and another professor in the program;
- Written recommendation from the Graduate Program Committee.

Note: Students must request permission to fast-track during the third term of enrollment or earlier and, if approved, must enroll in the PhD in the fourth term. To receive the doctorate, students must successfully complete 30 units of courses (MSc + PhD), the comprehensive examination, the thesis proposal and the thesis.

Program Requirements
Doctorate

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

Students must meet the following requirements:[1]

Compulsory Courses:

EBC 8101	Interdisciplinary Doctoral Seminar in E-Business I	3 Units
EBC 8102	Interdisciplinary Doctoral Seminar in E-Business II	3 Units
3 optional course units in electronic business (EBC) at the graduate level [2]		3 Units
Comprehensive Examination:		
EBC 9998	Comprehensive Exam [3]	
Thesis Proposal:		
EBC 9997	Thesis proposal [4]	

Thesis:

THD 9999	Doctoral Thesis [5]	

Note(s)

[1] The requirements outlined above are a minimum. For information about additional courses, please see the Admission Requirements section.

[2] The optional course must be selected from the list of courses in the student's chosen field and must be preapproved by the Thesis Advisory Committee.

[3] The comprehensive examination is a two-part examination (written and oral) that is overseen by the Advisory Committee. Once the written exam has been passed, the student proceeds to the oral. A student who fails either component of the exam is allowed to repeat it the following term. A second failure in either component leads to withdrawal from the program. The comprehensive examination must normally be completed within 4 terms of commencing the program and, at the latest, by the end of of the fifth term. Failure to sit and pass the examination by the deadline counts as a failure. Further details about the comprehensive exam are posted on the program's website.

[4] The thesis proposal, prepared under the direction of the thesis supervisor, must be defended to the satisfaction of the Thesis Advisory Committee (TAC). The proposal must normally be successfully completed by the end of the fifth term. In the event of failure, the proposal can be resubmitted and defended the following session at the latest. A second failure leads to withdrawal from the program. The proposal must be successfully defended before submitting it to the Research Ethics Board (if required) and before undertaking any independent data collection. Further details about the thesis proposal are posted on the program's website.

[5] 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:

ADM 6276	Enterprise Resource Planning Systems Management	1.5 Units
ADM 6279	Socio-Technical Change	1.5 Units
ADM 6286	International E-Business Strategies for EBT	1.5 Units
ADM 6420	Electronic Marketing	1.5 Units
ADM 6260	Project Management I	1.5 Units
ADM 6261	Project Management II	1.5 Units
CMN 5110	Social History of Communication Technologies	3 Units
CMN 5140	Communication, Globalization and Change	3 Units
CMN 5150	Knowledge Management	3 Units
CSI 5105	Network Security and Cryptography	3 Units
CSI 5111	Software Quality Engineering	3 Units
CSI 5112	Software Engineering	3 Units
CSI 5115	Database Analysis and Design	3 Units
CSI 5118	Automated Verification and Validation of Software	3 Units
CSI 5122	Software Usability	3 Units

CSI 5180	Topics in Artificial Intelligence	3 Units
CSI 5386	Natural Language Processing	3 Units
CSI 5387	Data Mining and Concept Learning	3 Units
EBC 5125	Data Science Applications	3 Units
EBC 5175	Mobile Commerce Technologies	3 Units
EBC 5380	Systems and Architectures for Electronic Commerce	3 Units
EBC 5389	Electronic Commerce Technologies	3 Units
EBC 5990	Directed Readings	1.5 Units
EBC 5991	Directed Readings	1.5 Units
EBC 6130	Web Services	1.5 Units
EBC 6170	Cyber Security Systems and Strategies	1.5 Units
EBC 6180	Strategic Knowledge Management	1.5 Units
EBC 6210	Electronic Commerce Architecture	1.5 Units
EBC 6220	Data Mining for Business Applications	1.5 Units
EBC 6230	Business Process Management and Performance Measurement	3 Units
EBC 6240	Mobile Commerce	1.5 Units
EBC 6250	Document Engineering for E-Business	1.5 Units
EBC 6260	Integrated Networks for the Enterprise	1.5 Units
EBC 6300	Topics in Electronic Business	3 Units
EBC 6301	Topics in Electronic Business	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 5123	Enterprise Architecture	3 Units
GNG 5124	Internet Technologies and Mobile Commerce	3 Units
GNG 5130	Business Communication and Influence	3 Units
GNG 5131	Sales and Influence for Engineers	3 Units
GNG 5140	Engineering Design	3 Units
GNG 5141	Creativity and Innovation	3 Units
GNG 5231	Sales Engineer Internship Project	6 Units
GNG 5299	Industry Internship Project	6 Units
GNG 5300	Topics in Engineering	3 Units
GNG 5310	Topics in Industry Practice	3 Units
ISI 6312	Global Information and Communications Policy	3 Units
ISI 6322	Digital Preservation	3 Units
ISI 6332	Metadata and Taxonomies	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	Application of Information Technology in Health Care	1.5 Units
POP 8950	Special Topics in Population Health	3 Units

Minimum Requirements

Students who fail 6.0 units are withdrawn 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

EBC 5100 Introductory Seminar (1.5 unit)
Course Component: Lecture

EBC 5125 Data Science Applications (3 units)
Analysis and design of various data cleaning, wrangling, blending, and visualization, statistical inference, classification, clustering, regression, and content analysis methods. Use of machine learning algorithms to extract meaningful information from data to make decisions. Formulating analytics problems for business and developing, evaluating, and maintaining machine learning models. Analyzing, generating, and communicating insights on the models. Hands-on experience with an integrated set of current data analytics, data mining, and machine learning tools.
Course Component: Lecture
Exclusion: CSI 5155, CSI 5387, GNG 5125.

EBC 5175 Mobile Commerce Technologies (3 units)
Wireless and mobile electronic commerce architecture and applications. Electronic banking, digital cash. Wireless exchanges, business models. Fixed and mobile wireless networks. Routing techniques. Content presentation. Security issues and solutions. Satellite networks for electronic commerce. Overview of relevant standards, protocols and technologies. Case studies.
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.
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.
Course Component: Lecture
Exclusion: CSI 5389.

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

EBC 5501 Fondements de gestion pour les affaires électroniques (3 crédits)
Théorie des organisations et modèles d'affaires. Cadres d'analyse de gestion. Modèles de l'avantage compétitif. Introduction aux modèles de marketing. Chaînes de valeur. La gestion par les processus. Gestion de la chaîne d'approvisionnement. Gestion de la qualité. Gestion des ressources humaines.
Volet : Cours magistral
Permission du Département est requise.

EBC 5502 Fondements des technologies de l'information pour les affaires électroniques (3 crédits)
Technologies d'Internet. Développement d'applications Web. Fondements des réseaux. Gestion des données et résolution de problèmes. Gestion de bases de données et d'entrepôts de données. Outils logiciels.
Volet : Cours magistral
Permission du Département est requise.

EBC 5503 Fondements des statistiques pour les affaires électroniques (3 crédits)
Théorie élémentaire des probabilités. Statistiques descriptives. Corrélations. Tables de fréquences. Tableaux croisés. Tests statistiques. Analyse multivariée.
Volet : Cours magistral
Permission du Département est requise.

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 / Préalable : MPC d'au moins 7

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 Cyber Security Systems and Strategies (1.5 unit)
User, data and network security principles. Information systems security standards. Security risk analysis frameworks. Overview of cyber security mechanisms including authentication, access control, data encryption and integrity, and Public Key Infrastructure. Cyber security including security in the wireless, cloud and IoT environments. Payment card industry security standards and compliance.
Course Component: Lecture

EBC 6180 Strategic Knowledge Management (1.5 unit)
Leveraging a firm's intellectual capital to enhance organizational performance. Business analysis frameworks, strategy roadmaps and enterprise architectures relevant to the planning and execution of knowledge management initiatives in organizations. Using the web to maximize knowledge acquisition and sharing among employees.
Course Component: Lecture

EBC 6210 Electronic Commerce Architecture (1.5 unit)
Three-tier Architecture. Building an e-Commerce Site. Client and Server side Scripting. Interactivity. E-Commerce Data bases. E-CRM. Wireless Internet and m-Business. Intermediaries and Software Agents. XML applications.
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 and Performance Measurement (3 units)
Hands on 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. Introduction to current performance measurement tools and the role of data science in business process management. Example applications such as supply chain management, order processing, and health care process management will be studied.
Course Component: Laboratory, Lecture

EBC 6240 Mobile Commerce (1.5 unit)
M-Commerce business models and strategies, Wireless technology standards and evolution. Industry analysis and value creation frameworks. Diffusion and adoption of M-Commerce technologies. Demand-side and supply-side enterprise applications of M-Commerce.
Course Component: Lecture

EBC 6250 Document Engineering for E-Business (1.5 unit)
E-business from a Document Engineering Perspective. E-documents as the basis for e-business relationships. Modelling e-business documents and Processes. XML as a vehicle to defining a formal structural and semantic definition for electronic documents. XML syntax, styles and transformations, Document Type Definitions, and schema languages. XML Vocabularies for E-business. XML standards, specifications, and software architectures for e-business. E-documents within the enterprise. E-document exchanges for multi-company business activities.
Course Component: Lecture

EBC 6260 Integrated Networks for the Enterprise (1.5 unit)
OSI reference model. LAN characteristics. Interconnecting LAN. Interconnecting with TCP/IP. Routing protocols. IPv6. WAN options. Security protocols. VPN. Enterprise-Wide Solutions.
Course Component: Lecture

EBC 6300 Topics in Electronic Business (3 units)
Recent and advanced topics in the field of Electronic Business and its related areas. Topics vary from year to year.
Course Component: Lecture

EBC 6301 Topics in Electronic Business (1.5 unit)
Recent and advanced topics in the field of Electronic Business and its related areas. Topics vary from year to year.
Course Component: Lecture

EBC 6700 Thèmes choisis en affaires électroniques (3 crédits)
Sujets actuels et avancés en affaires électroniques et disciplines connexes. Les sujets varient d'une année à l'autre.
Volet : Cours magistral

EBC 6701 Thèmes choisis en affaires électroniques (1.5 crédit)
Sujets actuels et avancés en affaires électroniques et disciplines connexes. Les sujets varient d'une année à l'autre.
Volet : Cours magistral

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 cannont be combined for units.
Volet / Course Component: Cours magistral / Lecture
Exclusion : CSI 5903, CSI 5904. / Exclusion: CSI 5903, CSI 5904.

EBC 6950 Lectures dirigées / Directed Readings (1.5 crédit / 1.5 unit)
Volet / 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 appliquée (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)
Philosophy of Science. Research problem definition. Research Designs. Experimental Research. Modeling principles: analytical modeling and simulation. Measurement and scaling. Sampling. Hypotheses testing and statistical significance. Multivariate Analysis. Mathematical properties of computational problems: decidability and computability. Qualitative methods. Writing a Research Manuscript. Presentation of research results.
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