DOCTORATE IN PHILOSOPHY
DIGITAL TRANSFORMATION
AND INNOVATION

Overview
* Please note that the former title of this program was: 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 of full-time study
• Academic units: Telfer School of Management (https://telfer.uottawa.ca/en/), Faculty of Arts (https://arts.uottawa.ca/en/), Faculty of Engineering (http://engineering.uottawa.ca/), School of Electrical and Computer Science (http://engineering.uottawa.ca/eecs/)

Program Description
The Digital Transformation and Innovation program is a multi-faculty collaboration between the Telfer School of Management, the Faculty of Arts, and the Faculty of Engineering to train highly qualified professionals to create, manage and research the profound change to our world that is happening as a result of electronic digital technology. At its heart, the technology enables the collection and communication of huge amounts of data that transforms how business and society works. It also creates a new online environment where the experience of business and social interactions by individuals is being reinvented. Innovation is an important aspect of the program to emphasize the re-invention and creative design of user experiences in business and social interactions.

Main Areas of Research
Research in the Digital Transformation and Innovation program is multi-disciplinary and involves collaboration between professors and students in Telfer School of Management, Faculty of Arts, and Faculty of Engineering. Design is a significant aspect of research in Digital Transformation and Innovation. This includes: design and implementation of applications, information design, visual literacy, user experience, and audience research.

Telfer School of Management
• Digital Marketing, Consumer Behavior, Customer Experience Design and Relationship Management
• Business Analytics and Business Intelligence
• Health Systems Innovation and Management
• Entrepreneurship, Innovation and Strategic Management
• Business Technology Management (including IT Diffusion, Adoption and Consumerization)
• Globalization, Governance, and Sustainability

Faculty of Arts
• Algorithmic culture, platformization, and datafication
• Information and communication regulation and policy
• Privacy and surveillance
• Cultural, economic, political, and social impacts of innovation in digital networks and applications
• Information governance and ethics

Faculty of Engineering
• Applied Data Science
• User Experience
• Digital Health
• Cloud Computing
• Internet of Things

Other Programs Offered Within the Same Discipline or in a Related Area
• Master of Science Digital Transformation and Innovation
• Master of Digital Transformation and Innovation
• Master of Digital Transformation and Innovation with Concentration in UX Design
• Master of Digital Transformation and Innovation with Concentration in Applied Data Science

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 at the University of Ottawa.
• 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

Admissions 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 Digital Transformation and Innovation, 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 equivalences 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 Digital Transformation and Innovation 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:
    - DTI 7100, pr 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 optional 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 int he student’s letter of admission.

Language Requirements

Most courses are delivered in English as the international language for advanced information technology. However, the program will provide an appropriately supportive environment for francophone students to develop professional competence in technical English at their own pace. Students have the right, as stipulated in the University’s bilingualism regulations (Academic Regulations I-2), to complete all their work, including their thesis, in the official language of their choice (French or English). There are fully bilingual professors and advisors who can support students in French.

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 50 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.
- A score of at least 14 on the CANTEST, with no individual test score below 4.0, along with a minimum score of 4.5 on the oral component of the test.

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.

Fast-Track from Master's to PhD

Students enrolled in the MSc program in Digital Transformation and Innovation 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 12 units of MSc courses with a minimum average of 8.5;
- Written recommendation from the proposed PhD thesis supervisor;
- Written recommendation from the Graduate Program Committee.

Program Requirements

Doctorate

Students must meet the following requirements.¹

Compulsory Courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTI 8101</td>
<td>Interdisciplinary Doctoral Seminar in Digital Transformation and Innovation I</td>
<td>3</td>
</tr>
<tr>
<td>DTI 8102</td>
<td>Interdisciplinary Doctoral Seminar in Digital Transformation and Innovation II</td>
<td>3</td>
</tr>
</tbody>
</table>

3 optional course units from the list of optional courses² 3 Units

Comprehensive Examination:
Lists of Optional Courses

Management Orientation

<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>ADM 6261</td>
<td>Project Management II</td>
<td>1.5</td>
</tr>
<tr>
<td>ADM 6276</td>
<td>Enterprise Resource Planning Systems Management</td>
<td>1.5</td>
</tr>
<tr>
<td>ADM 6277</td>
<td>E-Business Energy Management</td>
<td>1.5</td>
</tr>
<tr>
<td>ADM 6279</td>
<td>Socio-Technical Change</td>
<td>1.5</td>
</tr>
<tr>
<td>ADM 6286</td>
<td>International E-Business Strategies for DTI</td>
<td>1.5</td>
</tr>
<tr>
<td>ADM 6420</td>
<td>Digital Marketing</td>
<td>1.5</td>
</tr>
<tr>
<td>DTI 5124</td>
<td>Internet Technologies and Mobile Commerce</td>
<td>3</td>
</tr>
<tr>
<td>DTI 5125</td>
<td>Data Science Applications</td>
<td>3</td>
</tr>
<tr>
<td>DTI 5126</td>
<td>Fundamentals for Applied Data Science</td>
<td>3</td>
</tr>
<tr>
<td>DTI 5990</td>
<td>Directed Readings I</td>
<td>1.5</td>
</tr>
<tr>
<td>DTI 5991</td>
<td>Directed Readings II</td>
<td>1.5</td>
</tr>
<tr>
<td>DTI 6130</td>
<td>Web Services</td>
<td>1.5</td>
</tr>
<tr>
<td>DTI 6170</td>
<td>Cyber Security Systems and Strategies</td>
<td>1.5</td>
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<tr>
<td>DTI 6180</td>
<td>Strategic Knowledge Management</td>
<td>1.5</td>
</tr>
<tr>
<td>DTI 6220</td>
<td>Data Analytics and Business Intelligence</td>
<td>1.5</td>
</tr>
</tbody>
</table>

DTI 6230 Business Process Management and Performance Measurement 3 Units

DTI 6240 Mobile Commerce 1.5 Units

DTI 6260 Integrated Networks for the Enterprise 1.5 Units

DTI 6300 Topics in Digital Transformation and Innovation 3 Units

DTI 6301 Topics in Digital Transformation and Innovation 3 Units

DTI 6302 Topics in Applied Data Science 3 Units

DTI 6303 Topics in Applied Data Science 1.5 Units

DTI 6304 Topics in User Experience Design 3 Units

DTI 6305 Topics in User Experience Design 1.5 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

MGT 6160 Systems of Innovation 3 Units

MHA 6271 Application of Information Technology in Health Care 1.5 Units

POP 8950 Special Topics in Population Health 3 Units

Technology Orientation

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADM 6287</td>
<td>Business Intelligence Technologies and Big Data Analytics for DTI</td>
<td>1.5</td>
</tr>
<tr>
<td>CSI 5105</td>
<td>Network Security and Cryptography</td>
<td>3</td>
</tr>
<tr>
<td>CSI 5111</td>
<td>Software Quality Engineering</td>
<td>3</td>
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<tr>
<td>CSI 5112</td>
<td>Software Engineering</td>
<td>3</td>
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<tr>
<td>CSI 5115</td>
<td>Database Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>CSI 5118</td>
<td>Automated Verification and Validation of Software</td>
<td>3</td>
</tr>
<tr>
<td>CSI 5122</td>
<td>Software Usability</td>
<td>3</td>
</tr>
<tr>
<td>CSI 5180</td>
<td>Topics in Artificial Intelligence</td>
<td>3</td>
</tr>
<tr>
<td>CSI 5311</td>
<td>Distributed Databases and Transaction Processing</td>
<td>3</td>
</tr>
<tr>
<td>CSI 5386</td>
<td>Natural Language Processing</td>
<td>3</td>
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<tr>
<td>DTI 5175</td>
<td>Mobile Commerce Technologies</td>
<td>3</td>
</tr>
<tr>
<td>DTI 5380</td>
<td>Systems and Architectures for Electronic Commerce</td>
<td>3</td>
</tr>
<tr>
<td>DTI 5389</td>
<td>Electronic Commerce Technologies</td>
<td>3</td>
</tr>
<tr>
<td>DTI 6402</td>
<td>Affective and Persuasive Computing</td>
<td>3</td>
</tr>
<tr>
<td>ELG 5121</td>
<td>Multimedia Communications</td>
<td>3</td>
</tr>
<tr>
<td>ELG 5142</td>
<td>Ubiquitous Sensing for Smart Cities</td>
<td>3</td>
</tr>
<tr>
<td>ELG 5373</td>
<td>Data Encryption</td>
<td>3</td>
</tr>
<tr>
<td>GNG 5120</td>
<td>Technology entrepreneurship for Engineers and Computer Scientists</td>
<td>3</td>
</tr>
<tr>
<td>GNG 5121</td>
<td>Planning of Experiments in Engineering Design</td>
<td>3</td>
</tr>
<tr>
<td>GNG 5122</td>
<td>Operational Excellence and Lean Six Sigma</td>
<td>3</td>
</tr>
<tr>
<td>GNG 5123</td>
<td>Enterprise Architecture</td>
<td>3</td>
</tr>
<tr>
<td>GNG 5130</td>
<td>Communication and Influence for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>GNG 5131</td>
<td>Sales and Influence for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>GNG 5231</td>
<td>Sales Engineer Internship Project</td>
<td>6</td>
</tr>
<tr>
<td>GNG 5300</td>
<td>Topics in Engineering</td>
<td>3</td>
</tr>
<tr>
<td>GNG 5310</td>
<td>Topics in Industry Practice</td>
<td>3</td>
</tr>
<tr>
<td>GNG 5140</td>
<td>Engineering Design</td>
<td>3</td>
</tr>
</tbody>
</table>

Note:
1. The requirements outlined above are minimum. For information about additional courses, please see the Admissions Requirement 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) this 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 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 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 (https://www.uottawa.ca/graduate-studies/students/theses/).
The courses DTI 5124, GNG 5124 cannot be combined for units.

**Course Component:** Lecture

The courses DTI 5125, CSI 5155, CSI 5387, GNG 5125 cannot be combined for units.

**DTI 5126 Fundamentals for Applied Data Science (3 units)**

Essential data science concepts relevant to practical applications are covered including: problem formulation; data acquisition; data preprocessing, modeling and statistical analysis. Hands-on experience with data science tools and techniques including: supervised and unsupervised machine learning; presentation of results; applications in areas such as accounting, finance, marketing and supply chain management.

**Course Component:** Lecture

**DTI 5175 Mobile Commerce Technologies (3 units)**


**Course Component:** Lecture

**DTI 5310 Ethics for Design, AI, and Robotics (3 units)**

Artificial Intelligence technologies are becoming ever more present in applications like: automated vehicles and mobility-as-a-service (e.g. driving and system-level control algorithms); business intelligence (e.g. predictive resource allocation); consumer electronics (e.g. social robots and smart speakers); healthcare (e.g. image classification in medical imaging); the justice system (e.g. recidivism prediction and sentencing); and weapons systems (e.g. targeting and kill decision-making). Many of these applications are raising significant ethical concerns. A range of topics in applied technology ethics are examined through the lens of contemporary philosophy and applied ethics texts and popular media articles. Practical frameworks, methodologies and tools for anticipating, and addressing, ethical issues are introduced through hands-on, group-based design thinking workshops and projects.

**Course Component:** Lecture

The courses DTI 5310, CSI 5195 cannot be combined for units.

**DTI 5380 Systems and Architectures for Electronic Commerce (3 units)**


**Course Component:** Lecture

**DTI 5389 Electronic Commerce Technologies (3 units)**


**Course Component:** Lecture

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**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 (SADR)s:

- 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.

**Courses**

**DTI 5100 Introductory Seminar (1.5 unit)**

**Course Component:** Seminar

**DTI 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.

**DTI 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

The courses DTI 5125, GNG 5125, GNG 5125 cannot be combined for units.

**DTI 5175 Mobile Commerce Technologies (3 units)**


**Course Component:** Lecture

**DTI 5126 Fundamentals for Applied Data Science (3 units)**

Essential data science concepts relevant to practical applications are covered including: problem formulation; data acquisition; data preprocessing, modeling and statistical analysis. Hands-on experience with data science tools and techniques including: supervised and unsupervised machine learning; presentation of results; applications in areas such as accounting, finance, marketing and supply chain management.

**Course Component:** Lecture

**DTI 5175 Mobile Commerce Technologies (3 units)**


**Course Component:** Lecture

**DTI 5310 Ethics for Design, AI, and Robotics (3 units)**

Artificial Intelligence technologies are becoming ever more present in applications like: automated vehicles and mobility-as-a-service (e.g. driving and system-level control algorithms); business intelligence (e.g. predictive resource allocation); consumer electronics (e.g. social robots and smart speakers); healthcare (e.g. image classification in medical imaging); the justice system (e.g. recidivism prediction and sentencing); and weapons systems (e.g. targeting and kill decision-making). Many of these applications are raising significant ethical concerns. A range of topics in applied technology ethics are examined through the lens of contemporary philosophy and applied ethics texts and popular media articles. Practical frameworks, methodologies and tools for anticipating, and addressing, ethical issues are introduced through hands-on, group-based design thinking workshops and projects.

**Course Component:** Lecture

The courses DTI 5310, CSI 5195 cannot be combined for units.

**DTI 5380 Systems and Architectures for Electronic Commerce (3 units)**


**Course Component:** Lecture

**DTI 5389 Electronic Commerce Technologies (3 units)**


**Course Component:** Lecture
DTI 5501 Fondements de gestion pour les affaires électroniques (3 crédits)
Theorie des organisations et modeles d'affaires. Cadres d'analyse de
gestion. Modeles de l'avantage competitif. Introduction aux modeles
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

DTI 5502 Fondements des technologies de l'information pour les affaires
electroniques (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

DTI 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

DTI 5990 Études dirigées / Directed Readings I (1.5 crédit / 1.5 unit)
Volet / Course Component: Recherche / Research

DTI 5991 Études dirigées / Directed Readings II (1.5 crédit / 1.5 unit)
Volet / Course Component: Recherche / Research

DTI 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

DTI 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

DTI 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

DTI 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

DTI 6220 Data Analytics and Business Intelligence (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,
network, 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

DTI 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: Lecture

DTI 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

DTI 6250 Document Engineering for Digital Transf. and Innovation (1.5
unit)
Digital Transf. and Innovation from a Document Engineering Perspective.
E-documents as the basis for DTI relationships. Modelling DTI 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 DTI. XML standards, specifications, and software
architectures for DTI. E-documents within the enterprise. E-document
exchanges for multi-company business activities.
Course Component: Lecture

DTI 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

DTI 6300 Topics in Digital Transformation and Innovation (3 units)
Recent and advanced topics in the field of Digital Transformation and
Innovation and its related areas. Topics vary from year to year.
Course Component: Lecture

DTI 6301 Topics in Digital Transformation and Innovation (3 units)
Recent and advanced topics in the field of Digital Transformation and
Innovation and its related areas. Topics vary from year to year.
Course Component: Lecture

DTI 6302 Topics in Applied Data Science (3 units)
Recent and advanced topics in the field of Applied Data Science and its
related areas. Topics vary from year to year.
Course Component: Lecture

DTI 6303 Topics in Applied Data Science (1.5 unit)
Recent and advanced topics in the field of Applied Data Science and its related areas. Topics vary from year to year.
Course Component: Lecture

DTI 6304 Topics in User Experience Design (3 units)
Recent and advanced topics in the field of User Experience Design and its related areas. Topics vary from year to year.
Course Component: Lecture

DTI 6401 User Experience Principles and Practices (3 units)
User experience (UX) facets including functionality, usability and desirability as key success factors for technology adoption and acceptance; Human-computer interaction (HCI) theories; UX frameworks and patterns for interaction design, information design, and visual design; UX management best practices; UX design methods and tools; UX evaluation and usability engineering.
Course Component: Lecture
The courses DTI 6104, CSI 5122 cannot be combined for units.

DTI 6402 Affective and Persuasive Computing (3 units)
Course Component: Lecture
Prerequisite: CSI 5122 or DTI 6401.

DTI 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

DTI 6701 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

DTI 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. / Practical international experience.
Volet / Course Component: Cours magistral / Lecture

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

DTI 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 rédité 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

DTI 7100 Research Methods in Digital Transf. and Innovation (3 units)
Course Component: Lecture

DTI 7101 Research Workshop in Digital Transf. and Innovation (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

DTI 7102 Interdisciplinary Research Methods in Digital Transf. and Innovation (1.5 unit)
Writing a Interdisciplinary Research Proposal. Research design. Introduction to positivist and interpretive approaches, behavioral and design science research, qualitative and quantitative research methods, and sampling strategies and techniques.
Course Component: Lecture

DTI 7103 Visual Literacy and User Experience Design Principles (3 units)
Invited workshops, presentations and events involving researchers from business, engineering, and arts and experts from industry. In addition to in-class quizzes and assignment, student write a literature survey paper and submit a research or project proposal to address a topic in User Experience Design (UXD).
Course Component: Lecture
Prerequisite: CSI 5122 or DTI 6401.

DTI 7990 Proposition de thèse / Thesis Proposal
Volet / Course Component: Recherche / Research

DTI 8101 Interdisciplinary Doctoral Seminar in Digital Transformation and Innovation I (3 units)
Recent developments in Digital Transformation and Innovation 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 DTI 8102. Course reserved for students in the Digital Transformation and Innovation PhD program.
Course Component: Seminar
DTI 8102 Interdisciplinary Doctoral Seminar in Digital Transformation and Innovation II (3 units)
Recent developments in Digital Transformation and Innovation 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 DTI 8101. Course reserved for students in the Digital Transformation and Innovation PhD program.

Course Component: Seminar

DTI 9997 Projet de thèse doctoral / Doctorate Thesis Proposal
Volet / Course Component: Recherche / Research

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