Information Systems, MSIS (Toronto)

We offer cutting-edge expertise in a variety of courses that combine technological advances and business practices. We stress creative and inventive approaches to problem solving, which necessitates empowering students so that they can take charge of their own software projects to become originally productive. Our information systems program (https://coe.northeastern.edu/academics-experiential-learning/academic-departments/mgen/ms-insy/) is as much an art as a science. It bypasses mechanical learning and highlights the value and excitement of engineering thinking that gets things done efficiently as well as imaginatively. We balance theory and practice, on the premise that they are always intertwined and interdependent.

We seek to provide a basic foundation for our students and then seek to push them to new heights to advance their information technology skills in a way that keeps up and, better yet, exceeds the necessarily fast pace of this progressive field. It is not for us just a question of not being left behind; we strive to be at the forefront of software innovation in an effort to transform contemporary society even more radically than technology has already done—to take gigantic strides in business, medicine, education, and security.

Program Requirements

Complete all courses and requirements listed below unless otherwise indicated.

Core Requirements

Code	Title	Hours
INFO 5100 and INFO 5101	Application Engineering and Development and Lab for INFO 5100	4

Options

Complete one of the following options:

PROJECT OPTION

Code	Title	Hours
INFO 7945	Master's Project	4
Complete 24 semester hours from the Electives course list below. A minimum of 12 semester hours must be INFO courses. (p. 1)		24

THESIS OPTION

Code	Title	Hours
INFO 7945	Master's Project	4
INFO 7990	Thesis	4
Complete 20 semester hours from the Electives course list below. A minimum of 8 semester hours must be INFO courses. (p. 1)		20
In addition to completing the thesis course, students must successfully complete the thesis submission process, including securing committee and Graduate School of Engineering signatures and submission of an electronic copy of their MS thesis to ProQuest.		

Electives

Code	Title	Hours
CSYE 6200	Concepts of Object-Oriented Design	
CSYE 6205	Concepts of Object-Oriented Design with C++	
CSYE 6225	Network Structures and Cloud Computing	
CSYE 6230	Operating Systems	
CSYE 6305	Introduction to Quantum Computing with Applications	
CSYE 7105	High-Performance Parallel Machine Learning and AI	
CSYE 7125	Advanced Cloud Computing	
CSYE 7200	Big-Data System Engineering Using Scala	
CSYE 7215	Foundations of Parallel, Concurrent, and Multithreaded Programming	
CSYE 7220	Deployment and Operation of Software Applications	
CSYE 7230	Software Engineering	
CSYE 7235	Model-Driven Architecture	
CSYE 7270	Building Virtual Environments	
CSYE 7280	User Experience Design and Testing	
CSYE 7374	Special Topics in Computer Systems Engineering	

CSYE 7380	Theory and Practical Applications of AI Generative Modeling
DAMG 6105	Data Science Engineering with Python
DAMG 6210	Data Management and Database Design
DAMG 7245	Big-Data Systems and Intelligence Analytics
DAMG 7250	Big Data Architecture and Governance
DAMG 7275	Advanced Database Management Systems
DAMG 7350	Systems and Cybersecurity Fundamentals
DAMG 7370	Designing Advanced Data Architectures for Business Intelligence
DAMG 7374	Special Topics in Data Architecture and Management
INFO 5001	Application Modeling and Design
INFO 5002	Introduction to Python for Information Systems
INFO 6105	Data Science Engineering Methods and Tools
INFO 6106	Neural Modeling Methods and Tools
INFO 6150	Web Design and User Experience Engineering
INFO 6205	Program Structure and Algorithms
INFO 6215	Business Analysis and Information Engineering
INFO 6245	Planning and Managing Information Systems Development
INFO 6250 and INFO 6251	Web Development Tools and Methods and Lab for INFO 6250
INFO 6255	Software Quality Control and Management
INFO 6350	Smartphones-Based Web Development
INFO 6660	Business Ethics and Intellectual Property for Engineers
INFO 7110	High-Performance Coding for Fintech
INFO 7225	Accounting and Budgetary Systems for Engineers
INFO 7245	Agile Software Development
INFO 7250	Engineering of Big-Data Systems
INFO 7255	Advanced Big-Data Applications and Indexing Techniques
INFO 7260	Business Process Engineering
INFO 7285	Organizational Change and IT
INFO 7374	Special Topics in Information Systems
INFO 7375	Special Topics in Artificial Intelligence Engineering and Applications
INFO 7380	User Experience Design for Healthcare Applications
INFO 7385	Managerial Communications for Engineers
INFO 7390	Advances in Data Sciences and Architecture
INFO 7405	Advances in Engineering Medical Information Systems
INFO 7410	Advanced Medical Device Software Engineering
INFO 7500	Cryptocurrency and Smart Contract Engineering
INFO 7510	Smart Contract Application Engineering and Development
INFO 7520	Engineering of Advanced Cryptocurrency Systems
INFO 7525	Regulatory Aspects of Smart Contract Automation
INFO 7535	Digital Smart Contracts Product Innovations
INFO 7610	Special Topics in Natural Language Engineering Methods and Tools
INFO 7976	Directed Study
TELE 5330 and TELE 5331	Data Networking and Lab for TELE 5330
TELE 5350	Telecom and Network Infrastructure
TELE 5360	Internet Protocols and Architecture
TELE 5600	Linux/UNIX Systems Management for Network Engineers
TELE 6300	Communication and Network Security
TELE 6400	Software-Defined Networking
TELE 6420	Infrastructure Automation Design and Tools
TELE 6500	Machine Learning for IoT Systems
TELE 6510	Fundamentals of the Internet of Things
TELE 6530	Connected Devices

| TELE 6550 | IoT Embedded System Design |
| TELE 7374 | Special Topics in the Internet of Things |

Optional Co-op Experience

Code	Title	Hours
Complete the following. Students must complete ENCP 6000 to qualify for co-op experience:		
ENCP 6000	Career Management for Engineers	1
ENCP 6964	Co-op Work Experience	0
or ENCP 6954	Co-op Work Experience - Half-Time	
or ENCP 6955	Co-op Work Experience Abroad - Half-Time	
or ENCP 6965	Co-op Work Experience Abroad	

Program Credit/GPA Requirements

32 total semester hours required (33 with optional co-op)
Minimum 3.000 GPA required