

Information Systems, MSIS (Miami)

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.

The program offers a wide range of courses that reflect current and future industry trends:

- Cryptocurrency and Smart Contract Engineering
- Engineering of Big-Data Systems
- Business Intelligence and Data Analytics
- Cyber-Security Engineering and Development
- Digital Business
- Full-Stack Software Engineering
- User Experience Design
- Data Science and Machine Learning Systems Engineering

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
Complete 28 semester hours from the Electives course list below. A minimum of 16 semester hours must be INFO courses. (p. 1)		28

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

Electives

Code	Title	Hours
CSYE 6200	Concepts of Object-Oriented Design	
CSYE 6202	Concepts of Object-Oriented Design with C#	
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 7270	Building Virtual Environments
CSYE 7370	Deep Learning and Reinforcement Learning in Game Engineering
CSYE 7374	Special Topics in Computer Systems Engineering
CSYE 7380	Theory and Practical Applications of AI Generative Modeling
CSYE 7470	Advanced Game Analytics
CSYE 7550	Distributed Intelligent Agents in the Metaverse
CSYE 7990	Thesis
DAMG 6105	Data Science Engineering with Python
DAMG 6210	Data Management and Database Design
DAMG 7250	Big Data Architecture and Governance
DAMG 7275	Advanced Database Management Systems
DAMG 7325	Introduction to Information Technology Auditing
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 6105	Data Science Engineering Methods and Tools
INFO 6106	Neural Modeling Methods and Tools
INFO 6150	Web Design and User Experience Engineering
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 6660	Business Ethics and Intellectual Property for Engineers
INFO 7110	High-Performance Coding for Fintech
INFO 7205	Advanced Application Engineering Project
INFO 7225	Accounting and Budgetary Systems for Engineers
INFO 7245	Agile Software Development
INFO 7255	Advanced Big-Data Applications and Indexing Techniques
INFO 7260	Business Process Engineering
INFO 7285	Organizational Change and IT
INFO 7330	Information Systems for Healthcare Services Delivery
INFO 7374	Special Topics in Information Systems
INFO 7375	Special Topics in Artificial Intelligence Engineering and Applications
INFO 7385	Managerial Communications for Engineers
INFO 7405	Advances in Engineering Medical Information Systems
INFO 7945	Master's Project
INFO 7990	Thesis