EMERGING TECHNOLOGIES (MS)

NYSED: 24121 **HEGIS:** 0999.00 **CIP:** 14.2701

Program Description

In the Emerging Technologies Master of Science program at NYU Tandon, students have the freedom to design a unique curriculum engineered by them to match their interests and professional aspirations.

This degree is ideal for individuals who intend to advance their careers within various tech roles across multiple industries. Explore cross-functional and high-value knowledge areas including machine learning & AI, user experience & design, wireless, cybersecurity, innovation & change management, robotics, data science, urban informatics, and software engineering.

In this 30-credit program, students have the autonomy to select concentrations[1] and courses from across several academic departments at Tandon. Students are free to optimize their studies by designing their own path, exploring the intersections across engineering disciplines that best fit their professional passions.

1

Students may switch concentrations once during the M.S. in Emerging Technologies program, but only after one semester in the original plan of study, and not in the last semester.

Why Choose NYU Tandon?

The Emerging Technologies M.S. program at Tandon allows you to develop your own unique cross-disciplinary path, integrating specialized learning from a variety of online courses and programs. This degree is inherently adaptable to the evolving technology landscape, leading to new opportunities and career advancement within in-demand fields.

Admissions

Admission to graduate programs in the Tandon School of Engineering requires the following minimum components:

- Résumé/CV
- Statement of Purpose
- Letters of Recommendation
- Transcripts
- Proficiency in English

The NYU Tandon Graduate Admissions website (https://engineering.nyu.edu/admissions/graduate/apply/requirements/) has additional information on school-wide admission.

Some programs may require additional components for admissions.

See the program's How to Apply (https://engineering.nyu.edu/admissions/graduate/how-apply/) for department-specific admission requirements and instructions.

Program Requirements

The program requires the completion of 30 credits, and students will select one of the following concentrations:

Cybersecurity

Course	Title	Credits
Core Courses		
Select three of the following:		9
CS-GY 6573	Penetration Testing and Vulnerability Analysis	
CS-GY 6813	Information, Security and Privacy	
CS-GY 6823	Network Security	
CS-GY 9163	Application Security	
CS-GY 9223	(Mobile Security)	
CS-GY 9223	(Offensive Security)	
MG-GY 8213		
Capstone		
CS-GY 6903	Applied Cryptography [1]	3
Emerging Technologies Electives		
Select six of the following: [2]		18
CS-GY 6033	Design and Analysis of Algorithms I	
CS-GY 6043	Design and Analysis of Algorithms II	
CS-GY 6053	Foundation of Data Science	
CS-GY 6063	Software Engineering I	
CS-GY 6073	Software Engineering II	
CS-GY 6313	INFORMATION VISUALIZATION	
CS-GY 6373	Programming Languages	
CS-GY 6513	Big Data	
CS-GY 6573	Penetration Testing and Vulnerability Analysis	
CS-GY 6613	Artificial Intelligence I	
CS-GY 6643	COMPUTER VISION	
CS-GY 6763	ALGORITHMIC MACHINE LEARNING AND DATA SCIENCE	
CS-GY 6813	Information, Security and Privacy	
CS-GY 6823	Network Security	
CS-GY 6843	Computer Networking	
CS-GY 6923	Machine Learning	
or ECE-GY 6143	MACHINE LEARNING	
CS-GY 9163	Application Security	
CS-GY 9223	(Mobile Security)	
CS-GY 9223	(Offensive Security)	
CUSP-GX 7013	Introduction to Applied Data Science	
CUSP-GX 7033	Machine Learning for Cities	
CUSP-GX 7053	Innovative City Governance	
CUSP-GX 8083	Big Data Management & Analysis	
CUSP-GX 8093	Data Visualization	
DM-GY 6053	Ideation & Prototyping	
DM-GY 6063	Creative Coding	
DM-GY 6133	Mobile Augmented Reality Studio	
DM-GY 9103	SPECIAL TOPICS IN DIGITAL MEDIA (User Experience Design)	
DS-GA 3001	Special Topics in Data Science (Responsible Data Science)	
ECE-GY 6013	Digital Communications	
ECE-GY 6023	Wireless Communications	
ECE-GY 6113	Digital Signal Processing I	
ECE-GY 6353	INTERNET ARCHITECTURE & PROTOCOLS	

ECE-GY 6363	Data Center and Cloud Computing
ECE-GY 6383	High-Speed Networks
MG-GY 6023	ECONOMICS AND STRATEGY
MG-GY 7953	Global Innovation
MG-GY 8213	
MG-GY 8673	Technology Strategy
ROB-GY 6003	FOUNDATIONS OF ROBOTICS
ROB-GY 6203	ROBOT PERCEPTION
ROB-GY 6213	ROBOT LOCALIZATION AND NAVIGATION
ROB-GY 6313	Robotic Gait and Manipulation
Total Credits	**30**

1

In the Capstone course, students will design and build an application that encrypts and decrypts individual files using a password and allows a user to search for keywords in an encrypted file. The program will also be able to detect tampering attempts.

2

Students may choose electives from the following lists that best suit their own interests and academic and professional goals. Other courses, not on this list, may be chosen with advisor approval. Note: courses that have been used to fulfill the core or capstone requirements do not also count towards the elective credits.

Data Science

Course	Title	Credits
Core Courses		
Select three of the following:		9
CS-GY 6053	Foundation of Data Science	
CS-GY 6313	INFORMATION VISUALIZATION	
CS-GY 6513	Big Data	
DS-GA 3001	Special Topics in Data Science (Responsible Data Science)	
ECE-GY 6363	Data Center and Cloud Computing	
Capstone		
CUSP-GX 7023	Applied Data Science [1]	3
Emerging Technologies Electives		
Select six of the following: [2]		18
CS-GY 6033	Design and Analysis of Algorithms I	
CS-GY 6043	Design and Analysis of Algorithms II	
CS-GY 6053	Foundation of Data Science	
CS-GY 6063	Software Engineering I	
CS-GY 6073	Software Engineering II	
CS-GY 6313	INFORMATION VISUALIZATION	
CS-GY 6373	Programming Languages	
CS-GY 6513	Big Data	
CS-GY 6573	Penetration Testing and Vulnerability Analysis	
CS-GY 6613	Artificial Intelligence I	
CS-GY 6643	COMPUTER VISION	
CS-GY 6763	ALGORITHMIC MACHINE LEARNING AND DATA SCIENCE	
CS-GY 6813	Information, Security and Privacy	
CS-GY 6823	Network Security	
CS-GY 6843	Computer Networking	
CS-GY 6923	Machine Learning	
or ECE-GY 6143	MACHINE LEARNING	
CS-GY 9163	Application Security	
CS-GY 9223	(Mobile Security)	
CS-GY 9223	(Offensive Security)	
CUSP-GX 7013	Introduction to Applied Data Science	
CUSP-GX 7033	Machine Learning for Cities	
CUSP-GX 7053	Innovative City Governance	
CUSP-GX 8083	Big Data Management & Analysis	
CUSP-GX 8093	Data Visualization	
DM-GY 6053	Ideation & Prototyping	
DM-GY 6063	Creative Coding	
DM-GY 6133	Mobile Augmented Reality Studio	
DM-GY 9103	SPECIAL TOPICS IN DIGITAL MEDIA (User Experience Design)	
DS-GA 3001	Special Topics in Data Science (Responsible Data Science)	
ECE-GY 6013	Digital Communications	
ECE-GY 6023	Wireless Communications	
ECE-GY 6113	Digital Signal Processing I	
ECE-GY 6353	INTERNET ARCHITECTURE & PROTOCOLS	
ECE-GY 6363	Data Center and Cloud Computing	
ECE-GY 6383	High-Speed Networks	
MG-GY 6023	ECONOMICS AND STRATEGY	
MG-GY 7953	Global Innovation	
MG-GY 8213		
MG-GY 8673	Technology Strategy	
ROB-GY 6003	FOUNDATIONS OF ROBOTICS	
ROB-GY 6203	ROBOT PERCEPTION	
ROB-GY 6213	ROBOT LOCALIZATION AND NAVIGATION	
ROB-GY 6313	Robotic Gait and Manipulation	
Total Credits		**30**

1

In the capstone course, students will complete an original research project utilizing open data to address a research question or hypothesis and synthesizing the materials and techniques covered in the curriculum.

2

Students may choose electives from the following lists that best suit their own interests and academic and professional goals. Other courses, not on this list, may be chosen with advisor approval. Note: courses that have been used to fulfill the core or capstone requirements do not also count towards the elective credits.

Innovation & Change Management

Course	Title	Credits
Core Courses		
MG-GY 6023	ECONOMICS AND STRATEGY	3
MG-GY 7953	Global Innovation	3
MG-GY 8673	Technology Strategy	3
Capstone		
MG-GY 9753	SELECTED TOPICS IN MANAGEMENT (Strategic Change Management) [1]	3

Emerging Technologies Electives		
Select six of the following: [2]		18
CS-GY 6033	Design and Analysis of Algorithms I	
CS-GY 6043	Design and Analysis of Algorithms II	
CS-GY 6053	Foundation of Data Science	
CS-GY 6063	Software Engineering I	
CS-GY 6073	Software Engineering II	
CS-GY 6313	INFORMATION VISUALIZATION	
CS-GY 6373	Programming Languages	
CS-GY 6513	Big Data	
CS-GY 6573	Penetration Testing and Vulnerability Analysis	
CS-GY 6613	Artificial Intelligence I	
CS-GY 6643	COMPUTER VISION	
CS-GY 6763	ALGORITHMIC MACHINE LEARNING AND DATA SCIENCE	
CS-GY 6813	Information, Security and Privacy	
CS-GY 6823	Network Security	
CS-GY 6843	Computer Networking	
CS-GY 6923	Machine Learning	
or ECE-GY 6143	MACHINE LEARNING	
CS-GY 9163	Application Security	
CS-GY 9223	(Mobile Security)	
CS-GY 9223	(Offensive Security)	
CUSP-GX 7013	Introduction to Applied Data Science	
CUSP-GX 7033	Machine Learning for Cities	
CUSP-GX 7053	Innovative City Governance	
CUSP-GX 8083	Big Data Management & Analysis	
CUSP-GX 8093	Data Visualization	
DM-GY 6053	Ideation & Prototyping	
DM-GY 6063	Creative Coding	
DM-GY 6133	Mobile Augmented Reality Studio	
DM-GY 9103	SPECIAL TOPICS IN DIGITAL MEDIA (User Experience Design)	
DS-GA 3001	Special Topics in Data Science (Responsible Data Science)	
ECE-GY 6013	Digital Communications	
ECE-GY 6023	Wireless Communications	
ECE-GY 6113	Digital Signal Processing I	
ECE-GY 6353	INTERNET ARCHITECTURE & PROTOCOLS	
ECE-GY 6363	Data Center and Cloud Computing	
ECE-GY 6383	High-Speed Networks	
MG-GY 6023	ECONOMICS AND STRATEGY	
MG-GY 7953	Global Innovation	
MG-GY 8213		
MG-GY 8673	Technology Strategy	
ROB-GY 6003	FOUNDATIONS OF ROBOTICS	
ROB-GY 6203	ROBOT PERCEPTION	
ROB-GY 6213	ROBOT LOCALIZATION AND NAVIGATION	
ROB-GY 6313	Robotic Gait and Manipulation	
Total Credits		**30**

1

In the capstone course, students will develop and present a comprehensive plan for implementing an organizational change of their choice, including building a case for the change, planning a change management process, and sustaining the change.

2

Students may choose electives from the following lists that best suit their own interests and academic and professional goals. Other courses, not on this list, may be chosen with advisor approval. Note: courses that have been used to fulfill the core or capstone requirements do not also count towards the elective credits.

Machine Learning & Artificial Intelligence

Course	Title	Credits
Core Courses		
Select three of the following:		9
CS-GY 6033	Design and Analysis of Algorithms I	
CS-GY 6613	Artificial Intelligence I	
CS-GY 6643	COMPUTER VISION	
CS-GY 6763	ALGORITHMIC MACHINE LEARNING AND DATA SCIENCE	
CS-GY 6923	Machine Learning	
or ECE-GY 6143	MACHINE LEARNING	
Capstone		
Select one of the following:		3
ECE-GY 7143	Advanced Machine Learning [1]	
CS-GY 6943	Artificial Intelligence for Games [2]	
Emerging Technologies Electives		
Select six of the following: [3]		18
CS-GY 6033	Design and Analysis of Algorithms I	
CS-GY 6043	Design and Analysis of Algorithms II	
CS-GY 6053	Foundation of Data Science	
CS-GY 6063	Software Engineering I	
CS-GY 6073	Software Engineering II	
CS-GY 6313	INFORMATION VISUALIZATION	
CS-GY 6373	Programming Languages	
CS-GY 6513	Big Data	
CS-GY 6573	Penetration Testing and Vulnerability Analysis	
CS-GY 6613	Artificial Intelligence I	
CS-GY 6643	COMPUTER VISION	
CS-GY 6763	ALGORITHMIC MACHINE LEARNING AND DATA SCIENCE	
CS-GY 6813	Information, Security and Privacy	
CS-GY 6823	Network Security	
CS-GY 6843	Computer Networking	
CS-GY 6923	Machine Learning	
or ECE-GY 6143	MACHINE LEARNING	
CS-GY 9163	Application Security	
CS-GY 9223	(Mobile Security)	
CS-GY 9223	(Offensive Security)	
CUSP-GX 7013	Introduction to Applied Data Science	
CUSP-GX 7033	Machine Learning for Cities	

CUSP-GX 7053	Innovative City Governance
CUSP-GX 8083	Big Data Management & Analysis
CUSP-GX 8093	Data Visualization
DM-GY 6053	Ideation & Prototyping
DM-GY 6063	Creative Coding
DM-GY 6133	Mobile Augmented Reality Studio
DM-GY 9103	SPECIAL TOPICS IN DIGITAL MEDIA (User Experience Design)
DS-GA 3001	Special Topics in Data Science (Responsible Data Science)
ECE-GY 6013	Digital Communications
ECE-GY 6023	Wireless Communications
ECE-GY 6113	Digital Signal Processing I
ECE-GY 6353	INTERNET ARCHITECTURE & PROTOCOLS
ECE-GY 6363	Data Center and Cloud Computing
ECE-GY 6383	High-Speed Networks
MG-GY 6023	ECONOMICS AND STRATEGY
MG-GY 7953	Global Innovation
MG-GY 8213	
MG-GY 8673	Technology Strategy
ROB-GY 6003	FOUNDATIONS OF ROBOTICS
ROB-GY 6203	ROBOT PERCEPTION
ROB-GY 6213	ROBOT LOCALIZATION AND NAVIGATION
ROB-GY 6313	Robotic Gait and Manipulation
Total Credits	**30**

1

Students will complete a project proposing, demonstrating, and evaluating a new theoretical or practical method addressing a notable issue in deep learning. Examples include compression of neural networks, optimization methods, multi-label classification, and bounding.

2

Students will work on a comprehensive project with the goal of producing research that could be publishable in CIG, AIIDE, FDG, or other core venues. Projects could include work such as a new game-playing algorithm, a new way of using an existing algorithm in a game, AI for your existing game, a new procedural generation algorithm, an analysis of how use PCG in various types of games, a characterization of a problem, a new user study, etc.

3

Students may choose electives from the following lists that best suit their own interests and academic and professional goals. Other courses, not on this list, may be chosen with advisor approval. Note: courses that have been used to fulfill the core or capstone requirements do not also count towards the elective credits.

Robotics

Course	Title	Credits
Core Courses		
Select three of the following:		9
CS-GY 6763	ALGORITHMIC MACHINE LEARNING AND DATA SCIENCE	
ECE-GY 6143	MACHINE LEARNING	
or CS-GY 6923	Machine Learning	
ROB-GY 6003	FOUNDATIONS OF ROBOTICS	
ROB-GY 6203	ROBOT PERCEPTION	
ROB-GY 6213	ROBOT LOCALIZATION AND NAVIGATION	
ROB-GY 6313	Robotic Gait and Manipulation	
Capstone		
Select one of the following:		3
ROB-GY 6323	REINFORCEMENT LEARNING AND OPTIMAL CONTROL FOR ROBOTICS [1]	
ROB-GY 6423	INTERACTIVE MEDICAL ROBOTICS [2]	
Emerging Technologies Electives		
Select six of the following: [3]		18
CS-GY 6033	Design and Analysis of Algorithms I	
CS-GY 6043	Design and Analysis of Algorithms II	
CS-GY 6053	Foundation of Data Science	
CS-GY 6063	Software Engineering I	
CS-GY 6073	Software Engineering II	
CS-GY 6313	INFORMATION VISUALIZATION	
CS-GY 6373	Programming Languages	
CS-GY 6513	Big Data	
CS-GY 6573	Penetration Testing and Vulnerability Analysis	
CS-GY 6613	Artificial Intelligence I	
CS-GY 6643	COMPUTER VISION	
CS-GY 6763	ALGORITHMIC MACHINE LEARNING AND DATA SCIENCE	
CS-GY 6813	Information, Security and Privacy	
CS-GY 6823	Network Security	
CS-GY 6843	Computer Networking	
CS-GY 6923	Machine Learning	
or ECE-GY 6143	MACHINE LEARNING	
CS-GY 9163	Application Security	
CS-GY 9223	(Mobile Security)	
CS-GY 9223	(Offensive Security)	
CUSP-GX 7013	Introduction to Applied Data Science	
CUSP-GX 7033	Machine Learning for Cities	
CUSP-GX 7053	Innovative City Governance	
CUSP-GX 8083	Big Data Management & Analysis	
CUSP-GX 8093	Data Visualization	
DM-GY 6053	Ideation & Prototyping	
DM-GY 6063	Creative Coding	
DM-GY 6133	Mobile Augmented Reality Studio	
DM-GY 9103	SPECIAL TOPICS IN DIGITAL MEDIA (User Experience Design)	
DS-GA 3001	Special Topics in Data Science (Responsible Data Science)	
ECE-GY 6013	Digital Communications	
ECE-GY 6023	Wireless Communications	
ECE-GY 6113	Digital Signal Processing I	
ECE-GY 6353	INTERNET ARCHITECTURE & PROTOCOLS	
ECE-GY 6363	Data Center and Cloud Computing	
ECE-GY 6383	High-Speed Networks	
MG-GY 6023	ECONOMICS AND STRATEGY	
MG-GY 7953	Global Innovation	

MG-GY 8213		
MG-GY 8673	Technology Strategy	
ROB-GY 6003	FOUNDATIONS OF ROBOTICS	
ROB-GY 6203	ROBOT PERCEPTION	
ROB-GY 6213	ROBOT LOCALIZATION AND NAVIGATION	
ROB-GY 6313	Robotic Gait and Manipulation	
Total Credits		**30**

1

Students will design and implement a controller for a 2D quadrotor.

2

Students will design and simulate a 2-channel teleoperation system for medical robotics application with TDPC.

3

Students may choose electives from the following lists that best suit their own interests and academic and professional goals. Other courses, not on this list, may be chosen with advisor approval. Note: courses that have been used to fulfill the core or capstone requirements do not also count towards the elective credits.

Software Development

Course	Title	Credits
Core Courses		
Select three of the following:		9
CS-GY 6033	Design and Analysis of Algorithms I	
CS-GY 6043	Design and Analysis of Algorithms II	
CS-GY 6063	Software Engineering I	
CS-GY 6073	Software Engineering II	
CS-GY 6373	Programming Languages	
Capstone		
CS-GY 6253	Distributed Operating Systems [1]	3
Emerging Technologies Electives		
Select six of the following: [2]		18
CS-GY 6033	Design and Analysis of Algorithms I	
CS-GY 6043	Design and Analysis of Algorithms II	
CS-GY 6053	Foundation of Data Science	
CS-GY 6063	Software Engineering I	
CS-GY 6073	Software Engineering II	
CS-GY 6313	INFORMATION VISUALIZATION	
CS-GY 6373	Programming Languages	
CS-GY 6513	Big Data	
CS-GY 6573	Penetration Testing and Vulnerability Analysis	
CS-GY 6613	Artificial Intelligence I	
CS-GY 6643	COMPUTER VISION	
CS-GY 6763	ALGORITHMIC MACHINE LEARNING AND DATA SCIENCE	
CS-GY 6813	Information, Security and Privacy	
CS-GY 6823	Network Security	
CS-GY 6843	Computer Networking	
CS-GY 6923	Machine Learning	
or ECE-GY 6143	MACHINE LEARNING	
CS-GY 9163	Application Security	
CS-GY 9223	(Mobile Security)	
CS-GY 9223	(Offensive Security)	
CUSP-GX 7013	Introduction to Applied Data Science	
CUSP-GX 7033	Machine Learning for Cities	
CUSP-GX 7053	Innovative City Governance	
CUSP-GX 8083	Big Data Management & Analysis	
CUSP-GX 8093	Data Visualization	
DM-GY 6053	Ideation & Prototyping	
DM-GY 6063	Creative Coding	
DM-GY 6133	Mobile Augmented Reality Studio	
DM-GY 9103	SPECIAL TOPICS IN DIGITAL MEDIA (User Experience Design)	
DS-GA 3001	Special Topics in Data Science (Responsible Data Science)	
ECE-GY 6013	Digital Communications	
ECE-GY 6023	Wireless Communications	
ECE-GY 6113	Digital Signal Processing I	
ECE-GY 6353	INTERNET ARCHITECTURE & PROTOCOLS	
ECE-GY 6363	Data Center and Cloud Computing	
ECE-GY 6383	High-Speed Networks	
MG-GY 6023	ECONOMICS AND STRATEGY	
MG-GY 7953	Global Innovation	
MG-GY 8213		
MG-GY 8673	Technology Strategy	
ROB-GY 6003	FOUNDATIONS OF ROBOTICS	
ROB-GY 6203	ROBOT PERCEPTION	
ROB-GY 6213	ROBOT LOCALIZATION AND NAVIGATION	
ROB-GY 6313	Robotic Gait and Manipulation	
Total Credits		**30**

1

In the capstone course, students will select a domain area problem, conduct background research, and propose and implement a distributed system as a solution for the problem.

2

Students may choose electives from the following lists that best suit their own interests and academic and professional goals. Other courses, not on this list, may be chosen with advisor approval. Note: courses that have been used to fulfill the core or capstone requirements do not also count towards the elective credits.

Urban Informatics

Course	Title	Credits
Core Courses		
Select three of the following:		9
CUSP-GX 7013	Introduction to Applied Data Science	
CUSP-GX 7033	Machine Learning for Cities	
CUSP-GX 7053	Innovative City Governance	
CUSP-GX 8083	Big Data Management & Analysis	
CUSP-GX 8093	Data Visualization	
Capstone		
CUSP-GX 7043	Civic Analytics and Urban Intelligence [1]	3
Emerging Technologies Electives		
Select six of the following: [2]		18
CS-GY 6033	Design and Analysis of Algorithms I	

CS-GY 6043	Design and Analysis of Algorithms II
CS-GY 6053	Foundation of Data Science
CS-GY 6063	Software Engineering I
CS-GY 6073	Software Engineering II
CS-GY 6313	INFORMATION VISUALIZATION
CS-GY 6373	Programming Languages
CS-GY 6513	Big Data
CS-GY 6573	Penetration Testing and Vulnerability Analysis
CS-GY 6613	Artificial Intelligence I
CS-GY 6643	COMPUTER VISION
CS-GY 6763	ALGORITHMIC MACHINE LEARNING AND DATA SCIENCE
CS-GY 6813	Information, Security and Privacy
CS-GY 6823	Network Security
CS-GY 6843	Computer Networking
CS-GY 6923	Machine Learning
or ECE-GY 6143	MACHINE LEARNING
CS-GY 9163	Application Security
CS-GY 9223	(Mobile Security)
CS-GY 9223	(Offensive Security)
CUSP-GX 7013	Introduction to Applied Data Science
CUSP-GX 7033	Machine Learning for Cities
CUSP-GX 7053	Innovative City Governance
CUSP-GX 8083	Big Data Management & Analysis
CUSP-GX 8093	Data Visualization
DM-GY 6053	Ideation & Prototyping
DM-GY 6063	Creative Coding
DM-GY 6133	Mobile Augmented Reality Studio
DM-GY 9103	SPECIAL TOPICS IN DIGITAL MEDIA (User Experience Design)
DS-GA 3001	Special Topics in Data Science (Responsible Data Science)
ECE-GY 6013	Digital Communications
ECE-GY 6023	Wireless Communications
ECE-GY 6113	Digital Signal Processing I
ECE-GY 6353	INTERNET ARCHITECTURE & PROTOCOLS
ECE-GY 6363	Data Center and Cloud Computing
ECE-GY 6383	High-Speed Networks
MG-GY 6023	ECONOMICS AND STRATEGY
MG-GY 7953	Global Innovation
MG-GY 8213	
MG-GY 8673	Technology Strategy
ROB-GY 6003	FOUNDATIONS OF ROBOTICS
ROB-GY 6203	ROBOT PERCEPTION
ROB-GY 6213	ROBOT LOCALIZATION AND NAVIGATION
ROB-GY 6313	Robotic Gait and Manipulation
Total Credits	**30**

1

In the capstone course, students will complete an operational plan for data-based policy and program reform in one government department/agency (e.g., public safety, transportation) or nonprofit (e.g., the Red Cross or Rockefeller Foundation) by creating an overarching reform framework and identifying an area that has potential for significant impact. The plan will include operational and policy detail about existing efforts, assessment of the department or nonprofit, and identification of at least one new technology or platform to be applied. The plan will also include an assessment of community impact; race and equity; and examples of similar reform plans from other agencies, cities, or organizations.

2

Students may choose electives from the following lists that best suit their own interests and academic and professional goals. Other courses, not on this list, may be chosen with advisor approval. Note: courses that have been used to fulfill the core or capstone requirements do not also count towards the elective credits.

User Experience & Design

Course	Title	Credits
Core Courses		
Select three of the following:		9
DM-GY 6053	Ideation & Prototyping	
DM-GY 6063	Creative Coding	
DM-GY 6133	Mobile Augmented Reality Studio	
DM-GY 9103	SPECIAL TOPICS IN DIGITAL MEDIA (User Experience Design)	
Capstone		
DM-GY 6143	Interaction Design Studio [1]	3
Emerging Technologies Electives		
Select six of the following: [2]		18
CS-GY 6033	Design and Analysis of Algorithms I	
CS-GY 6043	Design and Analysis of Algorithms II	
CS-GY 6053	Foundation of Data Science	
CS-GY 6063	Software Engineering I	
CS-GY 6073	Software Engineering II	
CS-GY 6313	INFORMATION VISUALIZATION	
CS-GY 6373	Programming Languages	
CS-GY 6513	Big Data	
CS-GY 6573	Penetration Testing and Vulnerability Analysis	
CS-GY 6613	Artificial Intelligence I	
CS-GY 6643	COMPUTER VISION	
CS-GY 6763	ALGORITHMIC MACHINE LEARNING AND DATA SCIENCE	
CS-GY 6813	Information, Security and Privacy	
CS-GY 6823	Network Security	
CS-GY 6843	Computer Networking	
CS-GY 6923	Machine Learning	
or ECE-GY 6143	MACHINE LEARNING	
CS-GY 9163	Application Security	
CS-GY 9223	(Mobile Security)	
CS-GY 9223	(Offensive Security)	
CUSP-GX 7013	Introduction to Applied Data Science	

CUSP-GX 7033	Machine Learning for Cities
CUSP-GX 7053	Innovative City Governance
CUSP-GX 8083	Big Data Management & Analysis
CUSP-GX 8093	Data Visualization
DM-GY 6053	Ideation & Prototyping
DM-GY 6063	Creative Coding
DM-GY 6133	Mobile Augmented Reality Studio
DM-GY 9103	SPECIAL TOPICS IN DIGITAL MEDIA (User Experience Design)
DS-GA 3001	Special Topics in Data Science (Responsible Data Science)
ECE-GY 6013	Digital Communications
ECE-GY 6023	Wireless Communications
ECE-GY 6113	Digital Signal Processing I
ECE-GY 6353	INTERNET ARCHITECTURE & PROTOCOLS
ECE-GY 6363	Data Center and Cloud Computing
ECE-GY 6383	High-Speed Networks
MG-GY 6023	ECONOMICS AND STRATEGY
MG-GY 7953	Global Innovation
MG-GY 8213	
MG-GY 8673	Technology Strategy
ROB-GY 6003	FOUNDATIONS OF ROBOTICS
ROB-GY 6203	ROBOT PERCEPTION
ROB-GY 6213	ROBOT LOCALIZATION AND NAVIGATION
ROB-GY 6313	Robotic Gait and Manipulation
Total Credits	**30**

1

In the capstone course, students will complete an appropriate prototype of an interaction design for a client, service, or as a case study in human-computer interaction.

2

Students may choose electives from the following lists that best suit their own interests and academic and professional goals. Other courses, not on this list, may be chosen with advisor approval. Note: courses that have been used to fulfill the core or capstone requirements do not also count towards the elective credits.

Wireless & Networking

Course	Title	Credits
Core Courses		
Select three of the following:		9
CS-GY 6843	Computer Networking	
ECE-GY 6013	Digital Communications	
ECE-GY 6023	Wireless Communications	
ECE-GY 6113	Digital Signal Processing I	
ECE-GY 6353	INTERNET ARCHITECTURE & PROTOCOLS	
ECE-GY 6383	High-Speed Networks	
Capstone		
ECE-GY 7353	Network Modeling and Analysis [1]	3
Emerging Technologies Electives		
Select six of the following: [2]		18
CS-GY 6033	Design and Analysis of Algorithms I	
CS-GY 6043	Design and Analysis of Algorithms II	
CS-GY 6053	Foundation of Data Science	
CS-GY 6063	Software Engineering I	
CS-GY 6073	Software Engineering II	
CS-GY 6313	INFORMATION VISUALIZATION	
CS-GY 6373	Programming Languages	
CS-GY 6513	Big Data	
CS-GY 6573	Penetration Testing and Vulnerability Analysis	
CS-GY 6613	Artificial Intelligence I	
CS-GY 6643	COMPUTER VISION	
CS-GY 6763	ALGORITHMIC MACHINE LEARNING AND DATA SCIENCE	
CS-GY 6813	Information, Security and Privacy	
CS-GY 6823	Network Security	
CS-GY 6843	Computer Networking	
CS-GY 6923	Machine Learning	
or ECE-GY 6143	MACHINE LEARNING	
CS-GY 9163	Application Security	
CS-GY 9223	(Mobile Security)	
CS-GY 9223	(Offensive Security)	
CUSP-GX 7013	Introduction to Applied Data Science	
CUSP-GX 7033	Machine Learning for Cities	
CUSP-GX 7053	Innovative City Governance	
CUSP-GX 8083	Big Data Management & Analysis	
CUSP-GX 8093	Data Visualization	
DM-GY 6053	Ideation & Prototyping	
DM-GY 6063	Creative Coding	
DM-GY 6133	Mobile Augmented Reality Studio	
DM-GY 9103	SPECIAL TOPICS IN DIGITAL MEDIA (User Experience Design)	
DS-GA 3001	Special Topics in Data Science (Responsible Data Science)	
ECE-GY 6013	Digital Communications	
ECE-GY 6023	Wireless Communications	
ECE-GY 6113	Digital Signal Processing I	
ECE-GY 6353	INTERNET ARCHITECTURE & PROTOCOLS	
ECE-GY 6363	Data Center and Cloud Computing	
ECE-GY 6383	High-Speed Networks	
MG-GY 6023	ECONOMICS AND STRATEGY	
MG-GY 7953	Global Innovation	
MG-GY 8213		
MG-GY 8673	Technology Strategy	
ROB-GY 6003	FOUNDATIONS OF ROBOTICS	
ROB-GY 6203	ROBOT PERCEPTION	
ROB-GY 6213	ROBOT LOCALIZATION AND NAVIGATION	
ROB-GY 6313	Robotic Gait and Manipulation	
Total Credits		**30**

1

In the capstone course, students will complete a project either extending an existing network analysis model or implementing an experimental model in an attempt to reproduce and potentially extend a published result from current research.

2

Students may choose electives from the following lists that best suit their own interests and academic and professional goals. Other courses, not on this list, may be chosen with advisor approval. Note: courses that have been used to fulfill the core or capstone requirements do not also count towards the elective credits.

Sample Plan of Study

Full-Time

Course	Title	Credits
1st Semester/Term		
Core Course		3
Elective		3
Elective		3
	Credits	**9**
2nd Semester/Term		
Core Course		3
Elective		3
Elective		3
	Credits	**9**
3rd Semester/Term		
Core Course		3
Elective		3
Elective		3
	Credits	**9**
4th Semester/Term		
Capstone		3
	Credits	**3**
	Total Credits	**30**

Part-Time

Course	Title	Credits
1st Semester/Term		
Core Course		3
Elective		3
	Credits	**6**
2nd Semester/Term		
Core Course		3
Elective		3
	Credits	**6**
3rd Semester/Term		
Core Course		3
Elective		3
	Credits	**6**
4th Semester/Term		
Elective		3
Elective		3
	Credits	**6**
5th Semester/Term		
Capstone		3
Elective		3
	Credits	**6**
	Total Credits	**30**

Learning Outcomes

Upon successful completion of the program, graduates will:

1. Integrate concepts and methodologies from diverse fields to address complex technological challenges, showcasing their ability to work effectively at the intersection of different disciplines.
2. Develop the capacity to synthesize ideas from various domains, facilitating the creation of new knowledge in emerging technology areas, and demonstrate their ability to design and execute projects that contribute to the advancement of technology and its applications.
3. Thrive in dynamic and ever-changing technology environments, while exhibiting a high degree of adaptability, enabling them to leverage their interdisciplinary education to capitalize on new opportunities within in-demand fields.

Policies

NYU Policies

University-wide policies can be found on the New York University Policy pages (https://bulletins.nyu.edu/nyu/policies/).

Tandon Policies

Additional academic policies can be found on the Tandon academic policy page (https://bulletins.nyu.edu/graduate/engineering/academic-policies/).