EMERGING TECHNOLOGIES (MS)

NYSED: 24121 HEGIS: 0701 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 & Al, 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 concentrations¹ 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

Co	ourse	Title	Credits
Сс	ore Courses		
Se	elect 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		
Ca	pstone		
CS	S-GY 6903	Applied Cryptography ¹	3
En	nerging Technol	ogies Electives	
Se	elect six of the fo	ollowing: 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	L
	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 Da Science)	ta
	ECE-GY 6013	Digital Communications	
	ECE-GY 6023	Wireless Communications	
	ECE-GY 6113	Digital Signal Processing I	
	ECE-GY 6353	INTERNET ARCHITECTURE & PROTOCOLS	

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

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	Core Courses				
Select three o	of the following:	9			
CS-GY 605	3 Foundation of Da	ta Science			
CS-GY 631	3 INFORMATION V	ISUALIZATION			
CS-GY 651	3 Big Data				
DS-GA 300	1 Special Topics in Science)	Data Science (Responsible Data			
ECE-GY 63	63 Data Center and	Cloud Computing			
Capstone					
CUSP-GX 702	3 Applied Data Scie	ence ¹ 3			
Emerging Tec	hnologies Electives				
Select six of t	he following: ²	18			
CS-GY 603	3 Design and Analy	sis of Algorithms I			
CS-GY 604	3 Design and Analy	sis of Algorithms II			
CS-GY 605	3 Foundation of Da	ta Science			
CS-GY 606	3 Software Enginee	ering l			
CS-GY 607	3 Software Enginee	ering II			
CS-GY 631	3 INFORMATION V	ISUALIZATION			
CS-GY 637	3 Programming La	nguages			
CS-GY 651	3 Big Data				
CS-GY 657	3 Penetration Testi	ng and Vulnerability Analysis			
CS-GY 661	3 Artificial Intellige	nce l			
CS-GY 664	3 COMPUTER VISIO	ON			
CS-GY 676	3 ALGORITHMIC M SCIENCE	ACHINE LEARNING AND DATA			
CS-GY 681	3 Information, Secu	urity and Privacy			
CS-GY 682	3 Network Security				
CS-GY 684	3 Computer Netwo	rking			

б	tal Credits		30
	ROB-GY 6313	Robotic Gait and Manipulation	
	ROB-GY 6213	ROBOT LOCALIZATION AND NAVIGATION	
	ROB-GY 6203	ROBOT PERCEPTION	
	ROB-GY 6003	FOUNDATIONS OF ROBOTICS	
	MG-GY 8673	Technology Strategy	
	MG-GY 8213		
	MG-GY 7953	Global Innovation	
	MG-GY 6023	ECONOMICS AND STRATEGY	
	ECE-GY 6383	High-Speed Networks	
	ECE-GY 6363	Data Center and Cloud Computing	
	ECE-GY 6353	INTERNET ARCHITECTURE & PROTOCOLS	
	ECE-GY 6113	Digital Signal Processing I	
	ECE-GY 6023	Wireless Communications	
	ECE-GY 6013	Digital Communications	
	DS-GA 3001	Special Topics in Data Science (Responsible Data Science)	
	DM-GY 9103	SPECIAL TOPICS IN DIGITAL MEDIA (User Experience Design)	
	DM-GY 6133	Mobile Augmented Reality Studio	
	DM-GY 6063	Creative Coding	
	DM-GY 6053	Ideation & Prototyping	
	CUSP-GX 8093	Data Visualization	
	CUSP-GX 8083	Big Data Management & Analysis	
	CUSP-GX 7053	Innovative City Governance	
	CUSP-GX 7033	Machine Learning for Cities	
	CUSP-GX 7013	Introduction to Applied Data Science	
	CS-GY 9223	(Offensive Security)	
	CS-GY 9223	(Mobile Security)	
	CS-GY 9163	Application Security	
	or ECE- GY 6143	MACHINE LEARNING	
	CS-GY 6923	Machine Learning	

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)	c 3

Emerging Technologies Electives

Lineiging recimo		
Select six of the fo	ollowing: 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

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

1

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

a following:	
following.	
, following.	9
Design and Analysis of Algorithms I	
Artificial Intelligence I	
COMPUTER VISION	
ALGORITHMIC MACHINE LEARNING AND DATA SCIENCE	
Machine Learning	
MACHINE LEARNING	
following:	3
Advanced Machine Learning ¹	
Artificial Intelligence for Games ²	
ogies Electives	
ollowing: ³	18
Design and Analysis of Algorithms I	
Design and Analysis of Algorithms II	
Foundation of Data Science	
Software Engineering I	
Software Engineering II	
INFORMATION VISUALIZATION	
Programming Languages	
Big Data	
Penetration Testing and Vulnerability Analysis	
Artificial Intelligence I	
COMPUTER VISION	
ALGORITHMIC MACHINE LEARNING AND DATA SCIENCE	
Information, Security and Privacy	
Network Security	
Computer Networking	
Machine Learning	
MACHINE LEARNING	
Application Security	
(Mobile Security)	
(Offensive Security)	
Introduction to Applied Data Science	
Machine Learning for Cities	
	e following: Design and Analysis of Algorithms I Artificial Intelligence I COMPUTER VISION ALGORITHMIC MACHINE LEARNING AND DATA SCIENCE Machine Learning MACHINE LEARNING following: Advanced Machine Learning ¹ Artificial Intelligence for Games ² ogies Electives ollowing: ³ Design and Analysis of Algorithms I Design and Analysis of Algorithms II Foundation of Data Science Software Engineering I Software Engineering I NFORMATION VISUALIZATION Programming Languages Big Data Penetration Testing and Vulnerability Analysis Artificial Intelligence I COMPUTER VISION ALGORITHMIC MACHINE LEARNING AND DATA SCIENCE Information, Security and Privacy Network Security Computer Networking Machine Learning MACHINE LEARNING Application Security (Mobile Security) (Offensive Security) Introduction to Applied Data Science Machine Learning for Cities

CUSP-GX 7053 Innovative City Governance

ROB-GY 6203 ROB-GY 6213	ROBOT PERCEPTION ROBOT LOCALIZATION AND NAVIGATION	
ROB-GY 6003		
MG-GY 8673	Technology Strategy	
MG-GY 8213		
MG-GY 7953	Global Innovation	
MG-GY 6023	ECONOMICS AND STRATEGY	
ECE-GY 6383	High-Speed Networks	
ECE-GY 6363	Data Center and Cloud Computing	
ECE-GY 6353	INTERNET ARCHITECTURE & PROTOCOLS	
ECE-GY 6113	Digital Signal Processing I	
ECE-GY 6023	Wireless Communications	
ECE-GY 6013	Digital Communications	
DS-GA 3001	Special Topics in Data Science (Responsible Data Science)	
DM-GY 9103	SPECIAL TOPICS IN DIGITAL MEDIA (User Experience Design)	
DM-GY 6133	Mobile Augmented Reality Studio	
DM-GY 6063	Creative Coding	
DM-GY 6053	Ideation & Prototyping	
CUSP-GX 8093	Data Visualization	
CUSP-GX 8083	Big Data Management & Analysis	
	CUSP-GX 8083 CUSP-GX 8093 DM-GY 6053 DM-GY 6033 DM-GY 6133 DM-GY 6133 DM-GY 6133 DM-GY 6133 DS-GA 3001 CE-GY 6013 ECE-GY 6013 ECE-GY 6033 ECE-GY 6353 ECE-GY 6353 ECE-GY 6353 GCG-GY 6353 MG-GY 7953 MG-GY 8213 MG-GY 8673 ROB-GY 6003 ROB-GY 6203	CUSP-GX 8083Big Data Management & AnalysisCUSP-GX 8093Data VisualizationDM-GY 6053Ideation & PrototypingDM-GY 6063Creative CodingDM-GY 6133Mobile Augmented Reality StudioDM-GY 9103SPECIAL TOPICS IN DIGITAL MEDIA (User Experience Design)DS-GA 3001Special Topics in Data Science (Responsible Data Science)ECE-GY 6013Digital CommunicationsECE-GY 6014Digital Signal Processing IECE-GY 6015INTERNET ARCHITECTURE & PROTOCOLSECE-GY 633Jata Center and Cloud ComputingECE-GY 633IGbal InnovationFG-GY 7953Global InnovationFG-GY 8213Technology StrategyROB-GY 6003FOUNDATIONS OF ROBOTICSROB-GY 6203ROBOT PERCEPTIONROB-GY 6213ROBOT LOCALIZATION AND NAVIGATION

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 th	e following:	9
CS-GY 6763	ALGORITHMIC MACHINE LEARNING AND DATA	Ą
ECE-GY 6143	MACHINE LEARNING	
or CS- GY 6923	Machine Learning	

	ROB-GY 0003	FOUNDATIONS OF ROBUTICS	
	ROB-GY 6203	ROBOT PERCEPTION	
	ROB-GY 6213	ROBOT LOCALIZATION AND NAVIGATION	
	ROB-GY 6313	Robotic Gait and Manipulation	
Ca	pstone		
Se	elect one of the f	ollowing:	3
	ROB-GY 6323	REINFORCEMENT LEARNING AND OPTIMAL CONTROL FOR ROBOTICS ¹	
	ROB-GY 6423	INTERACTIVE MEDICAL ROBOTICS ²	
En	nerging Technol	ogies Electives	
Se	elect six of the fo	ollowing: 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	

٢o	otal Credits		30
	ROB-GY 6313	Robotic Gait and Manipulation	
	ROB-GY 6213	ROBOT LOCALIZATION AND NAVIGATION	
	ROB-GY 6203	ROBOT PERCEPTION	
	ROB-GY 6003	FOUNDATIONS OF ROBOTICS	
	MG-GY 8673	Technology Strategy	
	MG-GY 8213		

Total Credits

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	e 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 Technol	ogies Electives	
Select six of the fo	bllowing: 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	A
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)	

1			
То	tal Credits		30
	ROB-GY 6313	Robotic Gait and Manipulation	
	ROB-GY 6213	ROBOT LOCALIZATION AND NAVIGATION	
	ROB-GY 6203	ROBOT PERCEPTION	
	ROB-GY 6003	FOUNDATIONS OF ROBOTICS	
	MG-GY 8673	Technology Strategy	
	MG-GY 8213		
	MG-GY 7953	Global Innovation	
	MG-GY 6023	ECONOMICS AND STRATEGY	
	ECE-GY 6383	High-Speed Networks	
	ECE-GY 6363	Data Center and Cloud Computing	
	ECE-GY 6353	INTERNET ARCHITECTURE & PROTOCOLS	
	ECE-GY 6113	Digital Signal Processing I	
	ECE-GY 6023	Wireless Communications	
	ECE-GY 6013	Digital Communications	
	DS-GA 3001	Special Topics in Data Science (Responsible Data Science)	
	DM-GY 9103	SPECIAL TOPICS IN DIGITAL MEDIA (User Experience Design)	
	DM-GY 6133	Mobile Augmented Reality Studio	
	DM-GY 6063	Creative Coding	
	DM-GY 6053	Ideation & Prototyping	
	CUSP-GX 8093	Data Visualization	
	CUSP-GX 8083	Big Data Management & Analysis	
	CUSP-GX 7053	Innovative City Governance	
	CUSP-GX 7033	Machine Learning for Cities	
	CUSP-GX 7013	Introduction to Applied Data Science	
	CS-GY 9223	(Offensive Security)	

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:			
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 fo	bllowing: 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				
	KOB-GY 6213	ROBOT LOCALIZATION AND NAVIGATION			
_	KOB-GY 6313	Robotic Gait and Manipulation			
Го	otal Credits 30				

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

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 humancomputer 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	Core Courses				
Select three of the	e 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 f	ollowing: ²	18			
CS-GY 6033	Design and Analysis of Algorithms I				
CS-GY 6043	Design and Analysis of Algorithms II				

	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	
	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	
То	tal Credits		30

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.

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

1st Semester/Term 3 Elective 3 Credits 6 2nd Semester/Term 3 Core Course 3 Elective 3 Credits 6 3rd Semester/Term 3 Core Course 3 Elective 3 Credits 6 3rd Semester/Term 3 Core Course 3 Elective 3 Credits 6 4th Semester/Term 3 Elective 3 Elective 3 Credits 6 5th Semester/Term 3 Capstone 3 Elective 3 Elective 3 Credits 6 5th Semester/Term 3 Credits 6 Credits 6 Credits 6 Credits 6	Course	Title	Credits
Core Course 3 Elective 3 Credits 6 2nd Semester/Term 3 Credits 6 3rd Semester/Term 6 Credits 6 3rd Semester/Term 3 Core Course 3 Elective 3 Credits 6 4th Semester/Term 3 Elective 3 Elective 3 Credits 6 5th Semester/Term 3 Credits 6 5th Semester/Term 3 Elective 3 Elective 3 Credits 6 5th Semester/Term 3 Elective 3 Elective 3 Total Credits 6 Total Credits 30	1st Semester/Term		
Elective 3 Credits 6 2nd Semester/Term 3 Credits 6 3rd Semester/Term 6 Credits 6 3rd Semester/Term 3 Core Course 3 Elective 3 Credits 6 4th Semester/Term 3 Elective 3 Credits 6 5th Semester/Term 3 Credits 6 Sth Semester/Term 3 Credits 6 Sth Semester/Term 3 Credits 6 Total Credits 6	Core Course		3
Credits 6 2nd Semester/Term 3 Core Course 3 Elective 3 Credits 6 3rd Semester/Term 3 Core Course 3 Elective 3 Elective 3 Credits 6 4th Semester/Term 3 Elective 3 Elective 3 Credits 6 Sth Semester/Term 3 Credits 6 Sth Semester/Term 3 Elective 3 Elective 3 Credits 6 Total Credits 6	Elective		3
2nd Semester/Term Core Course Credits Core Course Credits Cred		Credits	6
Core Course 3 Elective 3 Credits 6 3rd Semester/Term 3 Core Course 3 Elective 3 Credits 6 4th Semester/Term 6 Elective 3 Credits 6 5th Semester/Term 3 Credits 6 5th Semester/Term 3 Elective 3 Credits 6 5th Semester/Term 3 Elective 3 Credits 6 5th Semester/Term 3 Capstone 3 Elective 3 Credits 6 Total Credits 6	2nd Semester/Term		
Elective 3 Credits 6 3rd Semester/Term 3 Core Course 3 Elective 3 Credits 6 4th Semester/Term 3 Elective 3 Credits 6 5th Semester/Term 3 Capstone 3 Elective 3 Credits 6 5th Semester/Term 3 Capstone 3 Elective 3 Credits 6 Total Credits 50	Core Course		3
Credits 6 3rd Semester/Term 3 Core Course 3 Elective 3 Credits 6 4th Semester/Term 3 Elective 3 Credits 6 Sth Semester/Term 6 Sth Semester/Term 3 Elective 3 Credits 6 Sth Semester/Term 3 Elective 3 Elective 3 Credits 6 Total Credits 5	Elective		3
3rd Semester/Term Core Course Selective Credits Credits Credits Credits Credits Semester/Term Capstone Elective Sth Semester/Term Capstone Elective Sth Semester/Term Capstone Credits Credits Selective Selec		Credits	6
Core Course 3 Elective 3 Credits 6 4th Semester/Term Elective 3 Credits 6 5th Semester/Term Capstone 3 Elective 3 Credits 6 Total Credits 6	3rd Semester/Term		
Elective 3 Credits 6 4th Semester/Term 3 Elective 3 Credits 6 5th Semester/Term 3 Capstone 3 Elective 3 Credits 6 Total Credits 30	Core Course		3
Credits 6 4th Semester/Term 3 Elective 3 Credits 6 Sth Semester/Term 3 Capstone 3 Elective 3 Credits 6 Credits 6 Credits 6 Total Credits 30	Elective		3
4th Semester/Term 3 Elective 3 Credits 6 5th Semester/Term 3 Capstone 3 Elective 3 Credits 6 Credits 6 Total Credits 30		Credits	6
Elective 3 Elective 3 Credits 6 5th Semester/Term Capstone 3 Elective 3 Credits 6 Total Credits 30	4th Semester/Term		
Elective 3 Credits 6 5th Semester/Term Capstone 3 Elective 3 Credits 6 Total Credits 30	Elective		3
Credits 6 5th Semester/Term 3 Capstone 3 Elective 3 Credits 6 Total Credits 30	Elective		3
5th Semester/Term Capstone 3 Elective 3 Credits 6 Total Credits 30		Credits	6
Capstone 3 Elective 3 Credits 6 Total Credits 30	5th Semester/Term		
Elective 3 Credits 6 Total Credits 30	Capstone		3
Credits 6 Total Credits 30	Elective		3
Total Credits 30		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.
- 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.
- 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/).