EMERGING TECHNOLOGIES (MS)

Digital Learning (https://engineering.nyu.edu/academics/programs/digital-learning/)

NYSED: 24121 **HEGIS:** 0701.00 **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 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.

Why Choose NYU Tandon?

The Emerging Technologies MS program at Tandon allows students to develop their 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

To apply for admission to any Tandon graduate program, please contact the Office of Graduate Admissions (https://engineering.nyu.edu/admissions/graduate/).

Program Requirements

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

Cybersecurity

Course	Title	Credits
Concentration Electives		
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 9215	Special Topics in Computer Science (Cyber Risk Management)	
CS-GY 9215	Special Topics in Computer Science (Cyber Resiliency Management)	
CS-GY 9223	Selected Topics in CS (Mobile Security)	
CS-GY 9223	Selected Topics in CS (Offensive Security)	
MG-GY 8213	INFORMATION SECURITY FOR MANAGERS	
Capstone		
CS-GY 6803	Information Systems Security Engineering and Management	3
Emerging Technologies Electives		
Choose 18 credits from the Emerging Technologies Electives list below. These must be courses that have not been used to fill the Concentration Electives or Capstone requirement.		18
Total Credits		**30**

Data Science

Course	Title	Credits
Concentration Electives		
Select three of the following:		9
BI-GY 7743	Machine Learning and Data Science for Bioinformatics	
CS-GY 6053	Foundation of Data Science	
CS-GY 6313	Information Visualization	
CS-GY 6513	Big Data	
CUSP-GX 7013	Introduction to Applied Data Science	
CUSP-GX 8093	Data Visualization	
ECE-GY 6363	Data Center and Cloud Computing	
Capstone		
CUSP-GX 7023	Applied Data Science	3
Emerging Technologies Electives		
Choose 18 credits from the Emerging Technologies Electives list below. These must be courses that have not been used to fill the Concentration Electives or Capstone requirement.		18
Total Credits		**30**

Innovation & Change Management

Course	Title	Credits
Concentration Electives		
MG-GY 6023	ECONOMICS AND STRATEGY	3
MG-GY 7953	Global Innovation	3
MG-GY 8673	Technology Strategy	3
Capstone		
MG-GY 9503	MOT Capstone Project Course	3
Emerging Technologies Electives		
Choose 18 credits from the Emerging Technologies Electives list below. These must be courses that have not been used to fill the Concentration Electives or Capstone requirement.		18
Total Credits		**30**

Machine Learning & Artificial Intelligence

Course	Title	Credits
Concentration Electives		
Select three of the following:		9
BI-GY 7743	Machine Learning and Data Science for Bioinformatics	
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	
CS-GY 6953	Deep Learning	
Capstone		
Select one of the following:		3
ECE-GY 7143	Advanced Machine Learning	
CS-GY 6943	Artificial Intelligence for Games	
Emerging Technologies Electives		
Choose 18 credits from the Emerging Technologies Electives list below. These must be courses that have not been used to fill the Concentration Electives or Capstone requirement.		18
Total Credits		**30**

Robotics

Course	Title	Credits
Concentration Electives		
Select three of the following:		9
CS-GY 6613	Artificial Intelligence I	
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 Autonomous Systems I	
ROB-GY 6423	Interactive Medical Robotics	
Emerging Technologies Electives		
Choose 18 credits from the Emerging Technologies Electives list below. These must be courses that have not been used to fill the Concentration Electives or Capstone requirement.		18
Total Credits		**30**

Software Development

Course	Title	Credits
Concentration Electives		
Select three of the following:		9
CS-GY 6033	Design and Analysis of Algorithms I	
CS-GY 6063	Software Engineering I	
CS-GY 6373	Programming Languages	
CS-GY 9053	Special Topics in Computer Science (Intro to Java)	
CS-GY 9223	Selected Topics in CS (CS-Open Source/ Professional Software)	
Capstone		
Select one of the following:		3
CS-GY 6533	Interactive Computer Graphics	
CS-GY 9223	Selected Topics in CS (Distributed Systems)	
Emerging Technologies Electives		
Choose 18 credits from the Emerging Technologies Electives list below. These must be courses that have not been used to fill the Concentration Electives or Capstone requirement.		18
Total Credits		**30**

Urban Informatics

Course	Title	Credits
Concentration Electives		
Select three of the following:		9
CUSP-GX 5053	Geographic Information Systems	
CUSP-GX 6023	Introduction to Programming for Solving Urban Challenges	
CUSP-GX 7013	Introduction to Applied Data Science	
CUSP-GX 7053	Innovative City Governance	
CUSP-GX 8093	Data Visualization	
Capstone		
CUSP-GX 7043	Civic Analytics	3
Emerging Technologies Electives		
Choose 18 credits from the Emerging Technologies Electives list below. These must be courses that have not been used to fill the Concentration Electives or Capstone requirement.		18
Total Credits		**30**

User Experience & Design

Course	Title	Credits
Concentration Electives		
Select three of the following:		9
CS-GY 6543	Human Computer Interaction	
DM-GY 6053	Ideation & Prototyping	
DM-GY 6063	Creative Coding	
DM-GY 6133	Mobile Augmented Reality Studio	
DM-GY 7133	User Experience Design	
DM-GY 9103	Special Topics in Digital Media (Visual Design Studio)	
Capstone		
DM-GY 9103	Special Topics in Digital Media (Project Design Studios)	3
Emerging Technologies Electives		
Choose 18 credits from the Emerging Technologies Electives list below. These must be courses that have not been used to fill the Concentration Electives or Capstone requirement.		18
Total Credits		**30**

Wireless & Networking

Course	Title	Credits
Concentration Electives		
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	3
Emerging Technologies Electives		
Choose 18 credits from the Emerging Technologies Electives list below. These must be courses that have not been used to fill the Concentration Electives or Capstone requirement.		18
Total Credits		**30**

Emerging Technologies Electives

Emerging Technologies Electives

Course	Title	Credits
Emerging Technologies Electives		
BI-GY 7743	Machine Learning and Data Science for Bioinformatics	3
CS-GY 6033	Design and Analysis of Algorithms I	3
CS-GY 6053	Foundation of Data Science	3
CS-GY 6063	Software Engineering I	3
CS-GY 6313	Information Visualization	3
CS-GY 6373	Programming Languages	3
CS-GY 6513	Big Data	3
CS-GY 6543	Human Computer Interaction	3
CS-GY 6573	Penetration Testing and Vulnerability Analysis	3
CS-GY 6613	Artificial Intelligence I	3
CS-GY 6643	Computer Vision	3
CS-GY 6763	Algorithmic Machine Learning and Data Science	3
CS-GY 6813	Information, Security and Privacy	3
CS-GY 6823	Network Security	3
CS-GY 6843	Computer Networking	3
CS-GY 6923	Machine Learning	3
or ECE-GY 6143	MACHINE LEARNING	
CS-GY 6953	Deep Learning	3
CS-GY 9053	Special Topics in Computer Science (Intro to Java)	3
CS-GY 9163	Application Security	3
CS-GY 9215	Special Topics in Computer Science (Cyber Resiliency Management)	1.5
CS-GY 9215	Special Topics in Computer Science (Cyber Risk Management)	1.5
CS-GY 9223	Selected Topics in CS (CS-Open Source/ Professional Software)	3
CS-GY 9223	Selected Topics in CS (Mobile Security)	3
CS-GY 9223	Selected Topics in CS (Offensive Security)	3
CUSP-GX 5053	Geographic Information Systems	3
CUSP-GX 6023	Introduction to Programming for Solving Urban Challenges	3
CUSP-GX 7013	Introduction to Applied Data Science	3
CUSP-GX 7053	Innovative City Governance	3
CUSP-GX 8093	Data Visualization	3
DM-GY 6053	Ideation & Prototyping	3
DM-GY 6063	Creative Coding	3
DM-GY 6133	Mobile Augmented Reality Studio	3
DM-GY 7133	User Experience Design	3
DM-GY 9103	Special Topics in Digital Media (Visual Design Studio)	3
ECE-GY 6013	Digital Communications	3
ECE-GY 6023	Wireless Communications	3
ECE-GY 6113	Digital Signal Processing I	3
ECE-GY 6353	INTERNET ARCHITECTURE & PROTOCOLS	3
ECE-GY 6363	Data Center and Cloud Computing	3
ECE-GY 6383	High-Speed Networks	3
GA-GY 8003	Global Perspectives in Emerging Technology	3
MG-GY 6023	ECONOMICS AND STRATEGY	3
MG-GY 7953	Global Innovation	3
MG-GY 8213	INFORMATION SECURITY FOR MANAGERS	3
MG-GY 8673	Technology Strategy	3
ROB-GY 6003	Foundations of Robotics	3
ROB-GY 6203	Robot Perception	3
ROB-GY 6213	Robot Localization and Navigation	3
ROB-GY 6313	Robotic Gait and Manipulation	3

Additional Emerging Technologies Electives

Students may choose Emerging Technologies Electives that best suit their own interests and academic and professional goals. Other courses, not listed above, may be chosen with adviser approval. Note: courses that have been used to fulfill the Concentration Electives or the Capstone requirements do not also count towards the Emerging Technologies Electives credits.

Changing Concentrations

Students may switch concentrations once during the program, but only after one semester in their original concentration. Any change in concentration much be requested before the student's final semester. More information about changing concentrations can be found under the *Request to Change Major* section of the Graduate Academics website (https://engineering.nyu.edu/academics/graduate/graduate-student-forms/).

Sample Plan of Study

Full-Time

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

Part-Time

Course	Title	Credits
1st Semester/Term		
Concentration Elective		3
Emerging Technologies Elective		3
	Credits	**6**
2nd Semester/Term		
Concentration Elective		3
Emerging Technologies Elective		3
	Credits	**6**
3rd Semester/Term		
Concentration Elective		3
Emerging Technologies Elective		3
	Credits	**6**
4th Semester/Term		
Emerging Technologies Elective		3
Emerging Technologies Elective		3
	Credits	**6**
5th Semester/Term		
Capstone		3
Emerging Technologies 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/).