TRANSPORTATION SYSTEMS (MS)

NYSED: 08811 **HEGIS:** 0908.00 **CIP:** 14.0804

Program Description

Technological advances in sensing, mobile communication, computation, imaging, artificial intelligence and many other fields have ushered in a new era for urban mobility. Transportation systems are becoming connected, automated, and electrified; on-demand mobility and delivery services are now ubiquitous in our cities; abundant, real-time traffic data makes possible adaptive congestion management strategies; combined with the near universality of smartphone ownership, these data make multi-modal transit systems possible. However, along with their promises for a better world, these systems pose a number of technological, operational, economic, and social challenges. The gap between technological advancement and its integration to our transportation system infrastructure is still large; concerns about privacy and data ownership abound; the safety of self-driving vehicles is still in question; the decarbonization of transportation systems is lagging behind; and the economic and social impacts of these technologies are yet to be fully understood.

The Master of Science in Transportation Systems at Tandon aims to equip students with the necessary knowledge to tackle the challenges inherent to this new era of urban mobility. The program, shaped by immersion in one of the largest metropolitan cities in the world, will provide students with a truly multidisciplinary education. They will gain solid technical foundations as transportation engineers, but also engage with other fields such as data science, operations research, economics, and public policy, to solve the pressing urban mobility challenges of the 21st century. Thus, our graduates will be able to bring their talents to engineering and technology companies; public agencies; and academia.

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 choose one of the following concentrations:

Transportation Systems Management

Course	Title	Credits
Major Requirements		
Core Requirement		
TR-GY 7013	Urban Transportation & Logistics Systems	3
Concentration Courses		
TR-GY 6053	TRANSPORTATION ECONOMICS AND FINANCE FUNDAMENTALS	3
Select two of the following:		6
CE-GY 8253	Project Management for Construction	
TR-GY 6113	Forecasting Urban Travel Demand	
TR-GY 7073	Travel Behavioral Informatics	
TR-GY 7133	Urban Public Transportation Systems	
Capstone		
Select one of the following:		3-6
TR-GY 6403	TRANSPORTATION & TRAFFIC PROJECT	
TR-GY 997X	MS THESIS IN TRANSPORTATION	
Electives		
Other Elective Credits [1]		12-15
Total Credits		**30**

1

Students who choose TR-GY 6403 TRANSPORTATION & TRAFFIC PROJECT for the Capstone will take 15 credits of electives. Students who choose TR-GY 997X MS THESIS IN TRANSPORTATION for the Capstone will take 12 credits of electives.

Mobility Systems Engineering

Course	Title	Credits
Major Requirements		
Core Requirement		
TR-GY 7013	Urban Transportation & Logistics Systems	3
Concentration Courses		
TR-GY 6113	Forecasting Urban Travel Demand	3
Select two of the following:		6
TR-GY 6343	TRAFFIC OPERATIONS & CONTROL	
TR-GY 7073	Travel Behavioral Informatics	
TR-GY 7083	Analytics and Learning Methods for Smart Cities	
TR-GY 7353	DATA-DRIVEN MOBILITY MODELING & SIMULATION	
Capstone		
Select one of the following:		3-6
TR-GY 6403	TRANSPORTATION & TRAFFIC PROJECT	
TR-GY 997X	MS THESIS IN TRANSPORTATION	
Electives		
Other Elective Credits [1]		12-15
Total Credits		**30**

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Students who choose TR-GY 6403 TRANSPORTATION & TRAFFIC PROJECT for the Capstone will take 15 credits of electives. Students who choose TR-GY 997X MS THESIS IN TRANSPORTATION will take 12 credits of electives.

Electives

Departmental Electives

Course	Title	Credits
CE-GY 8263	Construction Cost Estimating	3
CE-GY 8273	Contracts and Specifications	3
CE-GY 8283	Risk Analysis	3
CE-GY 8293	Construction Operations Analysis	3
CE-GY 8303	Information Systems in Project Management	3
CE-GY 8333	Marketing for Construction Management and Engineering Services	3
CE-GY 8353	CONSTRUCTION SCHEDULING	3
CE-GY 8373	CONSTRUCTION ACCOUNTING AND FINANCE	3
TR-GY 7223	Management of Transit Maintenance and Operations	3

Electives from External Departments and Other Schools

Course	Title	Credits
Center for Urban Sciences and Progress (CUSP)		
CUSP-GX 7013	Introduction to Applied Data Science	3
CUSP-GX 7023	Applied Data Science	3
CUSP-GX 7033	Machine Learning for Cities	3
CUSP-GX 7043	Civic Analytics and Urban Intelligence	3
CUSP-GX 7053	Innovative City Governance	3
CUSP-GX 8033	Urban Spatial Analytics	3
CUSP-GX 8053	Urban Decision Models	3
CUSP-GX 8083	Big Data Management & Analysis	3
CUSP-GX 8093	Data Visualization	3
CUSP-GX 8103	Data-Driven Methods for Policy Evaluation	3
CUSP-GX 8123	Disaster Risk Analysis and Urban Systems Resilience	3
Technology Management and Innovation		
MG-GY 6013	ORGANIZATIONAL BEHAVIOR	3
MG-GY 6193	STATISTICS FOR DATA ANALYSTS	3
MG-GY 6303	OPERATIONS MANAGEMENT	3
MG-GY 6463	Supply Chain Management	3
MG-GY 8423	MACHINE LEARNING FOR BUSINESS	3
NYU Wagner Graduate School of Public Service		
URPL-GP 2614		3
URPL-GP 2631	Transportation, Land Use and Urban Form	3
URPL-GP 2645	Planning for Emergencies and Disasters	3
PADM-GP 2106	Community Organizing	3
PADM-GP 2145	Design Thinking	3

Sample Plan of Study

Transportation Systems Management Thesis Track

Course	Title	Credits
1st Semester/Term		
TR-GY 7013	Urban Transportation & Logistics Systems	3
Elective		3
Elective		3
	Credits	**9**
2nd Semester/Term		
TR-GY 6053	TRANSPORTATION ECONOMICS AND FINANCE FUNDAMENTALS	3
CE-GY 8253	Project Management for Construction	3
TR-GY 7133	Urban Public Transportation Systems	3
	Credits	**9**
3rd Semester/Term		
TR-GY 997X	MS THESIS IN TRANSPORTATION	3
Elective		3
Elective		3
	Credits	**9**
4th Semester/Term		
TR-GY 997X	MS THESIS IN TRANSPORTATION	3
	Credits	**3**
	Total Credits	**30**

Non-Thesis Track

Course	Title	Credits
1st Semester/Term		
TR-GY 7013	Urban Transportation & Logistics Systems	3
Elective		3
Elective		3
	Credits	**9**
2nd Semester/Term		
TR-GY 6053	TRANSPORTATION ECONOMICS AND FINANCE FUNDAMENTALS	3
CE-GY 8253	Project Management for Construction	3
TR-GY 7133	Urban Public Transportation Systems	3
	Credits	**9**
3rd Semester/Term		
TR-GY 6403	TRANSPORTATION & TRAFFIC PROJECT	3
Elective		3
Elective		3
	Credits	**9**
4th Semester/Term		
Elective		3
	Credits	**3**
	Total Credits	**30**

Mobility Systems Engineering Thesis Track

Course	Title	Credits
1st Semester/Term		
TR-GY 7013	Urban Transportation & Logistics Systems	3
TR-GY 6113	Forecasting Urban Travel Demand	3
Elective		3
	Credits	**9**
2nd Semester/Term		
TR-GY 7073	Travel Behavioral Informatics	3
Elective		3
Elective		3
	Credits	**9**
3rd Semester/Term		
TR-GY 997X	MS THESIS IN TRANSPORTATION	3
TR-GY 7083	Analytics and Learning Methods for Smart Cities	3
Elective		3
	Credits	**9**

4th Semester/Term		
TR-GY 997X	MS THESIS IN TRANSPORTATION	3
	Credits	**3**
	Total Credits	**30**

Non-Thesis Track

Course	Title	Credits
1st Semester/Term		
TR-GY 7013	Urban Transportation & Logistics Systems	3
TR-GY 6113	Forecasting Urban Travel Demand	3
TR-GY 6343	TRAFFIC OPERATIONS & CONTROL	3
	Credits	**9**
2nd Semester/Term		
TR-GY 7353	DATA-DRIVEN MOBILITY MODELING & SIMULATION	3
Elective		3
Elective		3
	Credits	**9**
3rd Semester/Term		
TR-GY 6403	TRANSPORTATION & TRAFFIC PROJECT	3
Elective		3
Elective		3
	Credits	**9**
4th Semester/Term		
Elective		3
	Credits	**3**
	Total Credits	**30**

Learning Outcomes

Upon successful completion of the program, graduates will:

1. Fundamentally understand the nature and generation of transportation demands.
2. Be able to break down and analyze complex urban transportation systems and mobility services.
3. Know how to control and operate traffic and other transportation facilities.
4. Either have sufficient knowledge to join the workforce through a practicum or to produce original research as part of a thesis.

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/).