CIVIL ENGINEERING (MS)

Civil and Urban Engineering Department (https://engineering.nyu.edu/academics/departments/civil-and-urban-engineering/)

NYSED: 08808 **HEGIS:** 0908.00 **CIP:** 14.0801

Program Description

The Master of Science in Civil Engineering prepares graduates to practice their profession at an advanced level. Specific program objectives are to provide the skills and knowledge necessary to:

- Specialize in one of the primary subdisciplines (or tracks) of civil engineering or to achieve depth across a number of the subdisciplines;
- Design and analyze civil engineering infrastructure;
- Understand civil engineering materials, technologies and processes as applied to modern civil engineering infrastructure;
- Obtain civil engineering project management skills; and
- Provide a basis for continued, lifelong learning in the civil engineering profession.

Students are afforded the opportunity to specialize in one of the following six tracks or take courses from each of the six:

- Construction Management and Engineering
- Structural Engineering
- Geotechnical Engineering
- Environmental and Water Resources Engineering
- Urban Systems Engineering and Management
- Highway and Traffic Engineering

Admissions

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

Desired Background

Students seeking admission to the MS program should hold a bachelor's degree in civil engineering from a program accredited by the Accreditation Board for Engineering and Technology (ABET) and have a 3.0 GPA or better. Applicants lacking a BS from an ABET-accredited program in civil engineering (including those possessing undergraduate degrees in other engineering disciplines, engineering science, engineering technology and architecture, or from a foreign university) have their qualifications reviewed by a graduate adviser. Admission may be granted and may include the requirement for additional undergraduate courses to correct deficiencies. These additional courses are not counted toward the MS degree, nor are undergraduate courses included in computing graduate grade-point averages.

Program Requirements

The program requires the completion of 30 credits. Students must either follow the General Plan or the Single Track Plan as described below:

Course	Title	Credits
Core Courses		
Select four courses (12 credits) from the following:		12
CE-GY 6023	Materials for Civil Engineers	
CE-GY 6073	Instrumentation, Monitoring and Condition Assessment of Civil Infrastructure	
CE-GY 7673	Environmental Impact Assessment	
CE-GY 7843	Urban Infrastructure Systems Management	
CE-GY 8253	Project Management for Construction	
CE-GY 8283	Risk Analysis	
Track Courses		
Students will select 18 credits of track courses, following either the General Plan or the Single Track Plan outlined below.		18
General Plan		
Students following the General Plan will select two courses from three of the tracks below -- two courses from each one of their three chosen tracks.		
Single Track Plan		
Students following the Single Track Plan will choose four courses (12 credits) from one of the tracks below. The remaining two courses (6 credits) will be chosen in consulation with the academic adviser. [1]		
Total Credits		**30**

[1] Depending on the track chosen, students will either be free to choose the remaining two courses (6 credits) on their own, or the graduate adviser may ask them to take certain technical courses. If students choose courses outside of Tandon, these courses must be at least 3 credits each. Courses cannot be selected from the School of Professional Studies.

Tracks

Geotechnical Engineering

Course	Title	Credits
CE-GY 7233	Groundwater Hydrology and Pollution	3
CE-GY 8423	Ground Improvement	3
CE-GY 8493	Environmental Geotechnology	3
CE-GY 8603	Selected Topics in Geotechnical Engineering	3
CE-GY 8663	Advanced Foundation Design	3
CE-GY 8673	Excavation Support Systems	3

Structural Engineering

Course	Title	Credits
CE-GY 6013	Theory of Structural Analysis and Design	3
CE-GY 6063	Bridge Engineering	3
CE-GY 6143	Steel Structures	3
CE-GY 6163	Finite Element Methods	3
CE-GY 6183	Concrete Structures	3
CE-GY 6193	Wind and Earthquake Engineering	3
CE-GY 6253	Structural Dynamics	3
CE-GY 6263	Analysis and Design of Tall Buildings	3

Construction Management and Engineering

Course	Title	Credits
CE-GY 7963	Selected Topics in Construction I	3
CE-GY 8243	Construction Modeling Techniques	3
CE-GY 8253	Project Management for Construction	3

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 8313	Engineering for Construction I: Methods and Technologies	3
CE-GY 8333	Marketing for Construction Management and Engineering Services Mktg for Const Mgmt & Engr Serv	3
CE-GY 8343	Construction Site Safety	3
CE-GY 8353	Construction Scheduling	3
CE-GY 8373	Construction Accounting and Finance	3
CE-GY 8383	Building Information Modeling (BIM) and Its Applications in AEC/FM	3
CE-GY 8703	Managing and Leading in the 21st Century	3
CE-GY 8713	Construction and the Law	3
CE-GY 8733	Infrastructure Financing: Structuring of a Deal	3
CE-GY 8763	Capital Program Management/Program Development	3
CE-GY 8773	Dispute Avoidance and Resolution	3
CE-GY 8803	Infrastructure Planning for Public Works	3
ROB-GY 6203	Robot Perception	3

Environmental/Water Resources Engineering

Course	Title	Credits
CE-GY 7223	Hydrology	3
CE-GY 7233	Groundwater Hydrology and Pollution	3
CE-GY 7353	Selected Topics in Water Resources and Hydraulic Engineering I	3
CE-GY 7373	Environmental Chemistry & Microbiology	3
CE-GY 7423	Water & Wastewater Treatment	3
CE-GY 7673	Environmental Impact Assessment	3
CE-GY 7753	Environmental Systems Management	3
CE-GY 7473	Modeling Fate and Transport of Surface Water Pollution	3
CE-GY 7523	Air Pollution	3
CE-GY 7573	Detection and Control of Waterborne Pathogens	3
CE-GY 7653	Wetland Design for Water Quality Improvement	3
CE-GY 7703	Solid Waste Management	3
CE-GY 7713	Selected Topics in Environmental and Water Resources Engineering	3
CE-GY 7723	Selected Topics in Environmental and Water Resources Engineering I	3
CE-GY 7733	Geomatics and GIS Application in Civil and Environmental Engineering	3
CE-GY 7913	Climate Science: Realities & Risks of a Changing Climate	3
CE-GY 8283	Risk Analysis	3
CE-GY 8493	Environmental Geotechnology	3

Highway and Traffic Engineering

Course	Title	Credits
TR-GY 6113	Forecasting Urban Travel Demand	3
TR-GY 6223	Intelligent Transportation Systems and Their Applications	3
TR-GY 6333	Transportation & Traffic Concepts, Characteristics & Studies	3
TR-GY 6343	Traffic Operations & Control	3
TR-GY 7033	Multimodal Transportation Safety	3

Urban Systems Engineering and Management

Course	Title	Credits
CE-GY 6073	Instrumentation, Monitoring and Condition Assessment of Civil Infrastructure	3
CE-GY 7753	Environmental Systems Management	3
CE-GY 7853	Infrastructure Asset Management	3
CE-GY 8713	Construction and the Law	3
CE-GY 8733	Infrastructure Financing: Structuring of a Deal	3
TR-GY 6223	Intelligent Transportation Systems and Their Applications	3

Advising

Students are responsible for following the rules outlined in this bulletin for Tandon graduate students. While academic advisers consult with and advise students, students are responsible for ensuring that all degree requirements are fulfilled and for submitting all proper forms and applications. Students must meet with an academic adviser when they first enroll. Students must have a detailed program of study formally approved by an academic adviser before registration.

The academic adviser also handles requests for waivers of certain degree requirements, where warranted. Such waivers must be in writing and must be entered into the student's departmental record. Where specific courses are waived, approval of the course instructor may also be required. When waivers are granted, students may be required to take other specific courses in their place; otherwise, the student may take other courses of their choosing. Students registering for guided studies (readings, projects, theses) are assigned advisers for each such activity. To register for guided study, students must submit written proposals for the topic(s) to be covered to such advisers before registration. To register, students must obtain written approval of the project adviser and the academic adviser.

Sample Plan of Study

Course	Title	Credits
1st Semester/Term		
Core Course 1		3
Core Course 2		3
Track Course		3
	Credits	**9**
2nd Semester/Term		
Core Course 3		3
Core Course 4		3
Track Course		3
	Credits	**9**
3rd Semester/Term		
Track Course		3
Track Course		3

Track Course		3
	Credits	**9**
4th Semester/Term		
Track Course		3
	Credits	**3**
	Total Credits	**30**

Learning Outcomes

Upon successful completion of the program, graduates will have:

1. Developed in-depth expertise in at least one subdiscipline of civil engineering or to achieve depth across a number of the subdisciplines,
2. Learned the design and analysis of civil engineering infrastructure,
3. Understood civil engineering materials, technologies, and processes as applied to modern civil engineering infrastructure,
4. Obtained civil engineering project management skills,
5. Gained a basis for continued, lifelong learning in the civil engineering profession.

Policies

Program Policies

GPA Requirements

To earn any MS degree from NYU Tandon School of Engineering, students must maintain a B average or higher -- or a 3.0 cumulative grade point average (GPA) or higher -- in all graduate courses taken. Poor scholastic performance (under 3.0 GPA) will lead to the student being placed on academic probation. If the student's GPA does not rise to 3.0 after two terms on probation, the student will be disqualified from further graduate study at Tandon.

In the event that a student is required to take undergraduate prerequisite courses as a condition of admission, a grade of B- or better is required for every prerequisite course taken, and the cumulative GPA of all required prerequisite courses must be at least 3.0.

Transfer Credits

Students may transfer up to 6 credits of acceptable courses toward the MS degree, subject to their academic adviser's approval. To be transferred, the course(s) must relate to the student's program and be from an accredited institution. A grade of B or better is required for granting of transfer credit. Courses graded on a pass/fail basis are not considered for transfer unless accompanied by a detailed written evaluation by the course instructor. All transfer requests must be accompanied by an official transcript from the transferring institution. Applications for transfer credits must be submitted for consideration before the end of the first semester of matriculation. Validation credits by examination may not be used toward any civil engineering graduate degree program.

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/).