

CIVIL ENGINEERING (MS)

Department Website (<https://engineering.nyu.edu/academics/programs/civil-engineering-ms/>)

NYSED: 8808 **HEGIS:** 0908.00 **CIP:** 14.0801

Program Description

The Master of Science in Civil Engineering allows students to specialize in one of the following six areas of concentration:

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

Students also may elect to follow a general program by taking two courses across several areas of concentration. The Department of Civil and Urban Engineering also offers graduate programs in transportation planning and engineering and transportation management (see the Transportation section in this catalog), environmental science and engineering (see Environmental Engineering and Science section in this catalog), construction management and engineering (see the Construction Management section of this catalog), and urban systems engineering and management (see Urban Infrastructure Systems section in this catalog).

Admission

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.

Applicants to the MS program should take the Graduate Record Examination (GRE Advanced Tests) and achieve a minimum grade of 155 (700 on the previous scale) on the quantitative section. Applicants from universities outside the United States must take the Test of English as a Foreign Language (TOEFL) and achieve a minimum grade of 80.

International candidates who meet all other admission requirements but who fail to satisfy the TOEFL requirement may be required to take remedial courses in English before admission.

Program Requirements

The program requires the completion of 30 credits. Students must complete either the single area of concentration or general program requirements as described below:

Single Area of Concentration

Course	Title	Credits
Core Courses in Civil Engineering		
Select at least four of 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	
Concentration Area Courses		
Students selecting a single area of concentration must complete: (1) at least one core course in their concentration area; and (2) at least four additional concentration area courses. The course requirements of various concentration areas are listed in Tables 5-10. All students must satisfy all course prerequisites.		
Select one of the following concentrations:		12-18
Geotechnical Engineering Concentration		
Structural Engineering Concentration		
Construction Management and Engineering Concentration		
Environmental/Water Resources Engineering Concentration		
Highway and Traffic Engineering Concentration		
Urban Systems Engineering and Management Concentration		
Technical Electives		
Depending upon the choice of concentration area, select up to an additional 6 credits of course work, which may be satisfied from the following:		6-0
<i>Electives</i>		
Select three to six credits of elective courses ¹		
<i>Project</i>		
CE-GY 9963	MS PROJECT IN CIVIL & URBAN ENGINEERING DEPARTMENT	
<i>Thesis</i>		
CE-GY 997X	MS THESIS in CIVIL & URBAN ENGINEERING DEPT	
Total Credits		30

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Electives are normally selected from the courses given by the Department of Civil and Urban Engineering. However, electives may be selected from courses offered by other departments with written consent of the graduate adviser.

General Program

Course	Title	Credits
Core Courses in Civil Engineering		
Select at least four of 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	

Concentration Area Courses

Select two courses in each of three of the following Concentration Areas:	18
Geotechnical Engineering Concentration	
Structural Engineering Concentration	
Construction Management and Engineering Concentration	
Environmental/Water Resources Engineering Concentration	
Highway and Traffic Engineering Concentration	
Urban Systems Engineering and Management Concentration	
Total Credits	30

Concentration Area Courses Geotechnical Engineering

Course	Title	Credits
CE-GY 8423	Ground Improvement	3
CE-GY 8663	Advanced Foundation Design	3
CE-GY 8673	Excavation Support Systems	3
CE-GY 8403	GEOTECHNICS & GEOMATERIALS	3
CE-GY 8433	URBAN GEOTECHNOLOGY	3
CE-GY 8493	Environmental Geotechnolgy	3
CE-GY 7233	Groundwater Hydrology and Pollution	3
CE-GY 8603	Selected Topics in Geotechnical Engineering	3

Structural Engineering

Course	Title	Credits
CE-GY 6013	Theory of Structural Analysis and Design	3
CE-GY 6163	Finite Element Methods	3
CE-GY 6033	SELECTED TOPICS IN STRUCTURAL ANALYSIS I	3
CE-GY 6043	Selected Topics in Structural Analysis II	3
CE-GY 6063	Bridge Engineering	3
CE-GY 6133	Stability of Structures	3
CE-GY 6143	Steel Structures	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

Graduate Construction Management and Engineering courses, including Exec 21 courses, are listed in the Construction Management, M.S (<https://bulletins.nyu.edu/graduate/engineering/programs/construction-management-ms/>). section of this bulletin.

Environmental/Water Resources Engineering

Course	Title	Credits
CE-GY 6053	MONITORING CITIES	3
CE-GY 7223	HYDROLOGY	3
CE-GY 7233	Groundwater Hydrology and Pollution	3
CE-GY 7373	ENVIRONMENTAL CHEMISTRY & MICROBIOLOGY	3

CE-GY 7423	WATER & WASTEWATER TREATMENT	3
CE-GY 7353	Selected Topics in Water Resources and Hydraulic Engineering I	3
CE-GY 7473	Modeling Fate and Transport of Surface Water Pollution	3
CE-GY 7703	Solid Waste Management	3
CE-GY 7753	ENVIRONMENTAL SYSTEMS MANAGEMENT	3
CE-GY 8493	Environmental Geotechnolgy	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
TR-GY 7123	MANAGEMENT OF URBAN TRAFFIC CONGESTION	3
TR-GY 7323	DESIGN OF PARKING & TERMINAL FACILITIES	3
TR-GY 7343		3

Urban Systems Engineering and Management

Course	Title	Credits
CE-GY 7813	Infrastructure Planning, Engineering and Economics	3
CE-GY 7853	Infrastructure Asset Management	3
CE-GY 6073	Instrumentation, Monitoring and Condition Assessment of Civil Infrastructure	3
CE-GY 7753	ENVIRONMENTAL SYSTEMS MANAGEMENT	3
CE-GY 8713	Construction and the Law ¹	3
CE-GY 8733	Infrastructure Financing: Structuring of a Deal ¹	3
TR-GY 6223	Intelligent Transportation Systems and Their Applications	3

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Students must meet the requirements for enrollment in Exec 21 courses.

Sample Plan of Study Single Area of Concentration

Course	Title	Credits
1st Semester/Term		
Core Course 1		3
Core Course 2		3
Concentration Area Course 1		3
		Credits
		9
2nd Semester/Term		
Core Course 3		3
Core Course 4		3
Concentration Area Course 2		3
		Credits
		9
3rd Semester/Term		
Concentration Area Course 3		3
Concentration Area Course 4		3

Technical Elective 1	3
Credits	9
4th Semester/Term	
Technical Elective 2	3
Credits	3
Total Credits	30

General Program

Course	Title	Credits
1st Semester/Term		
Core Course 1		3
Core Course 2		3
1st Concentration Area Course 1		3
Credits		9
2nd Semester/Term		
Core Course 3		3
Core Course 4		3
1st Concentration Area Course 2		3
Credits		9
3rd Semester/Term		
2nd Concentration Area Course 1		3
2nd Concentration Area Course 2		3
3rd Concentration Area Course 1		3
Credits		9
4th Semester/Term		
3rd Concentration Area Course 2		3
Credits		3
Total Credits		30

Learning Outcomes

Upon successful completion of the program, graduates will:

1. Develop in-depth expertise in at least one subdiscipline of civil engineering or to achieve depth across a number of the subdisciplines.
2. Design and analysis of civil engineering infrastructure.
3. Understand civil engineering materials, technologies, and processes as applied to modern civil engineering infrastructure.
4. Obtain civil engineering project management skills; and 5. Provide a basis for continued, lifelong learning in the civil engineering profession.

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/>).