

Civil Engineering with Concentration in Structures, MSCivE (Boston)

For program contact information, please visit this website (<https://cee.northeastern.edu/academics/graduate-studies/ms-cive/>).

This program is designed for students with career goals in structural engineering and structural design. The program includes courses in structural analysis and design, structural mechanics, dynamics of structures, earthquake engineering, wind engineering, and structural health monitoring. The degree requirements include core courses from the Department of Civil and Environmental Engineering, complemented by electives in civil and environmental engineering, as well as electives from other departments such as mechanical and industrial engineering and mathematics.

Degree Requirements	With Project	With Thesis	Coursework Only
Required core courses	8 SH	8 SH	8 SH
Restricted electives	12 SH	12 SH	12 SH
Other electives	8 SH	4 SH	12 SH
Master of Science report/thesis	4 SH	8 SH	
Minimum semester hours required	32 SH	32 SH	32 SH

Graduate Certificate Options

Students enrolled in a master's degree have the opportunity to also pursue one of the many engineering graduate certificate options in addition to or in combination with the MS degree. Students should consult their faculty advisor regarding these options (<https://catalog.northeastern.edu/graduate/engineering/graduate-certificate-programs/>).

GORDON INSTITUTE OF ENGINEERING LEADERSHIP

Master's Degree in Civil Engineering with Concentration in Structures with Graduate Certificate in Engineering Leadership

Students may complete a Master of Science in Civil Engineering with Concentration in Structures in addition to earning a Graduate Certificate in Engineering Leadership (<https://catalog.northeastern.edu/graduate/engineering/multidisciplinary/engineering-leadership-graduate-certificate/>). Students must apply and be admitted to the Gordon Engineering Leadership Program in order to pursue this option. The program requires fulfillment of the 16-semester-hour curriculum required to earn the Graduate Certificate in Engineering Leadership, which includes an industry-based challenge project with multiple mentors. The integrated 36-semester-hour degree and certificate will require fulfillment of the 8-semester-hour core curriculum and 12 semester hours of restricted electives from the structures concentration coursework. For students who concurrently enroll in the Graduate Certificate in Engineering Leadership, 12 semester hours of the certificate coursework may be applied to the unrestricted elective requirements of this program's coursework option.

The Department of Civil and Environmental Engineering encourages students pursuing a GIEL certificate to complete their MS coursework requirements in their first year and their GIEL certificate requirements in their second year. Students who prefer to complete their GIEL certificate requirements in their first year are asked to speak with their MS degree advisor beforehand.

Program Requirements

Complete all courses and requirements listed below unless otherwise indicated.

Core Requirements

Code	Title	Hours
CIVE 7330	Advanced Structural Analysis	4
CIVE 7331	Structural Dynamics	4

Options

Complete one of the following options:

COURSEWORK OPTION

Code	Title	Hours
	Complete 12 semester hours from the restricted electives below.	12
	Complete 12 semester hours from the other electives below.	12

PROJECT OPTION

Code	Title	Hours
CIVE 7945	Master's Project	4
	Complete 12 semester hours from the restricted electives below.	12
	Complete 8 semester hours from the other electives below.	8

THESIS OPTION

Code	Title	Hours
CIVE 7945	Master's Project	4
CIVE 7990	Thesis	4
Complete 12 semester hours from the restricted electives below.		12
Complete 4 semester hours from the other electives below.		4

In addition to completing the thesis course, students must successfully complete the thesis submission process, including securing Committee and Graduate School of Engineering signatures and submission of an electronic copy of their MS Thesis to ProQuest.

Course Lists**RESTRICTED ELECTIVES LIST**

Code	Title	Hours
CIVE 5522	Structural Systems Modeling	
CIVE 7155	Dynamics and Control of Infrastructure Systems	
CIVE 7302	Advanced Foundation Engineering	
CIVE 7312	Earthquake Engineering	
CIVE 7340	Seismic Analysis and Design	
CIVE 7341	Structural Reliability	
CIVE 7342	System Identification	
CIVE 7350	Behavior of Concrete Structures	
CIVE 7351	Behavior of Steel Structures	
CIVE 7354	Wind Engineering	
CIVE 7355	Advanced Bridge Design	
CIVE 7357	Advanced Structural Mechanics	
CIVE 7388	Special Topics in Civil Engineering (Random Data and Processing)	

OTHER ELECTIVES LIST

Any restricted elective not used to meet the restricted elective requirement can be taken as another elective.

Code	Title	Hours
CIVE 5275	Life Cycle Assessment of Materials, Products, and Infrastructure	
CIVE 5520	Structural Systems	
CIVE 5524	Vibration-Based Structural Health Monitoring	
CIVE 5525	Prestressed Concrete Design	
CIVE 7150	Data-Driven Decision Support for Civil and Environmental Engineering	
CIVE 7151	Urban Informatics and Processing	
CIVE 7301	Advanced Soil Mechanics	
CIVE 7311	Soil and Foundation Dynamics	
MATH 7241	Probability 1	
MATH 7342	Mathematical Statistics	
MATH 7343	Applied Statistics	
MATL 7365	Properties and Processing of Electronic Materials	
ME 5240	Computer Aided Design and Manufacturing	
ME 5650	Advanced Mechanics of Materials	
ME 5654	Elasticity and Plasticity	
ME 5655	Dynamics and Mechanical Vibration	
ME 5657	Finite Element Method 1	
ME 5658	Continuum Mechanics	
ME 5659	Control Systems Engineering	
ME 6200	Mathematical Methods for Mechanical Engineers 1	
ME 7238	Finite Element Method 2	
SBSY 5100	Sustainable Design and Technologies in Construction	
SBSY 5200	Sustainable Engineering Systems for Buildings	

Optional Co-op Experience

Code	Title	Hours
Complete the following. Students must complete ENCP 6100 to qualify for co-op experience:		
ENCP 6100	Introduction to Cooperative Education	1
ENCP 6964	Co-op Work Experience	0
or ENCP 6954	Co-op Work Experience - Half-Time	
or ENCP 6965	Co-op Work Experience Abroad	
or ENCP 6955	Co-op Work Experience Abroad - Half-Time	

Program Credit/GPA Requirements

32 total semester hours required (33 with optional co-op)

Minimum 3.000 GPA required