

# Environmental Engineering, BSEnvE

Throughout the world, environmental engineers play a key role in defining the future of sustainable cities and communities. Creating innovations and designing systems that ensure clean and healthy environments are some of the greatest collective challenges of our time. Revolutionary strategies and designs are needed to create symbiosis between our natural and manmade environments.

Using new and advanced technologies, environmental engineers must address the world's growing challenges, including engineering sustainable strategies coupled with the development of devices and tools to better predict and address environmental needs to provide clean environments and planning green infrastructure in conjunction with the natural environment for a changing planet.

With a solid foundation in engineering, chemical, biological, and ecological principles, Northeastern's environmental engineering students learn how to tackle interconnected challenges as they relate to water, energy, air quality, and related fields. Understanding these complex interactions, particularly as they impact our built and natural environments, is embodied in our program through a holistic educational approach.

## Program Requirements

Complete all courses listed below unless otherwise indicated. Also complete any corequisite labs, recitations, clinicals, or tools courses where specified and complete any additional courses needed beyond specific college and major requirements to satisfy graduation credit requirements.

## Universitywide Requirements

All undergraduate students are required to complete the Universitywide Requirements (<http://catalog.northeastern.edu/undergraduate/university-academics/university-wide-requirements/>).

## NUPath Requirements

All undergraduate students are required to complete the NUPath Requirements (<http://catalog.northeastern.edu/undergraduate/university-academics/nupath/>).

NUPath requirements Interpreting Culture (IC), Societies and Institutions (SI), and Differences and Diversity (DD) are not explicitly satisfied by required engineering courses. Students are responsible for satisfying these requirements with general electives.

## Engineering

Code	Title	Hours
<b>Required Engineering</b>		
CIVE 2221 and CIVE 2222	Statics and Solid Mechanics and Recitation for CIVE 2221	4
CIVE 2260 and CIVE 2261	Materials for the Built Environment and Lab for CIVE 2260	5
CIVE 2331	Fluid Mechanics and Hydraulics	4
CIVE 2334	Environmental Engineering: Principles, Technology, and Sustainability	4
CIVE 3435	Environmental Pollution Fate and Transport	4
CIVE 4534 and CIVE 4535	Water Treatment Systems Design and Lab for CIVE 4534	4
CIVE 4765	Senior Design Project—Environmental	5
CIVE 5300 and CIVE 5301	Environmental Sampling and Analysis and Lab for CIVE 5300	4
GE 3300	Energy Systems: Science, Technology, and Sustainability	4
<b>Environmental Engineering Technical Electives</b>		
Complete 11-12 semester hours from the following:		11-12
CIVE 4540	Resource Recovery and Waste Treatment Technologies Abroad	
CIVE 4566	Design for Sustainable Transportation: Netherlands	
CIVE 4575	Construction Management	
CIVE 4777	Climate Hazards and Resilient Cities Abroad	
CIVE 5260	Environmental Fluid Mechanics	
CIVE 5261	Dynamic Modeling for Environmental Investment and Policymaking	
CIVE 5271	Solid and Hazardous Waste Management	
CIVE 5275	Life Cycle Assessment of Materials, Products, and Infrastructure	
CIVE 5280	Remote Sensing of the Environment	
CIVE 5281	Coastal Dynamics and Design	
CIVE 5363	Climate Science, Engineering Adaptation, and Policy	

CIVE 5536	Hydrologic and Hydraulic Design	
<b>Supplemental Credit</b>		
1 semester hour from the following course counts toward the engineering requirement:		1
CIVE 3464	Probability and Engineering Economy for Civil Engineering	
3 semester hours from the following course count toward the engineering requirement:		3
CIVE 2335	Environmental Engineering Chemistry	
3 semester hours from the following course count toward the engineering requirement:		3
CIVE 3430	Engineering Microbiology and Ecology	
2 semester hours from the following course count toward the engineering requirement:		2
GE 1501	Cornerstone of Engineering 1 <sup>1</sup>	
3 semester hours from the following course count toward the engineering requirement:		3
GE 1502	Cornerstone of Engineering 2 <sup>1</sup>	

### Supporting Courses: Mathematics/Science

Complete all Mathematics/Science courses with a minimum of 30 semester hours.

Code	Title	Hours
<b>Required Mathematics/Science</b>		
CHEM 1151 and CHEM 1153	General Chemistry for Engineers and Recitation for CHEM 1151	4
MATH 1341	Calculus 1 for Science and Engineering	4
MATH 1342	Calculus 2 for Science and Engineering	4
MATH 2321	Calculus 3 for Science and Engineering	4
MATH 2341	Differential Equations and Linear Algebra for Engineering	4
PHYS 1151 and PHYS 1152 and PHYS 1153	Physics for Engineering 1 and Lab for PHYS 1151 and Interactive Learning Seminar for PHYS 1151	5
<b>Science Elective (Earth)</b>		
Complete one of the following:		4-5
ENVR 1120	Oceans and Coasts	
ENVR 1200	Dynamic Earth	
ENVR 2200	Earth's Changing Cycles	
ENVR 3125	Global Oceanic Change	
ENVR 3200	Water Resources	
ENVR 3600	Oceanography	
ENVR 5201	Geologic Field Seminar	

<b>Supplemental Credit</b>		
3 semester hours from the following course count toward the mathematics/science requirement:		3
CIVE 3464	Probability and Engineering Economy for Civil Engineering	
1 semester hour from the following course counts toward the mathematics/science requirement:		1
CIVE 2335	Environmental Engineering Chemistry	
1 semester hour from the following course counts toward the mathematics/science requirement:		1
CIVE 3430	Engineering Microbiology and Ecology	
1 semester hour from the following course counts toward the mathematics/science requirement:		1
GE 1501	Cornerstone of Engineering 1 <sup>1</sup>	

### Professional Development

Code	Title	Hours
<b>Professional Development</b>		
GE 1000	First-Year Seminar	1
ENCP 2000	Introduction to Engineering Co-op Education	1
ENCP 3000	Professional Issues in Engineering	1
<b>Additional Required Courses</b>		
1 semester hour from the following course counts toward the professional development requirement:		1
GE 1501	Cornerstone of Engineering 1 <sup>1</sup>	

1 semester hour from the following course counts toward the professional development requirement: 1

GE 1502 Cornerstone of Engineering 2<sup>1</sup>

## Writing Requirements

Code	Title	Hours
A grade of C or higher is required:		
ENGW 1111	First-Year Writing	4
ENGW 3302 or ENGW 3315	Advanced Writing in the Technical Professions Interdisciplinary Advanced Writing in the Disciplines	4

## Required General Electives

Code	Title	Hours
Complete 24 SH of academic, nonremedial, nonrepetitive courses.		24

## Major GPA Requirement

2.000 minimum required in major (CIVE) courses

## Program Requirement

133 total semester hours required

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Students can substitute Engineering Design (GE 1110) and Engineering Problem Solving and Computation (GE 1111) for Cornerstone of Engineering 1 (GE 1501) and Cornerstone of Engineering 2 (GE 1502) in approved situations.

## Plan of Study

### FOUR YEARS, TWO CO-OPS IN SUMMER 2 / FALL

Year 1							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CHEM 1151 (ND)	4	GE 1502 (ER)	4	CIVE 2221	4	General Elective	4
CHEM 1153	0	MATH 1342 (FQ)	4	CIVE 2222	0	General Elective	4
ENGW 1111 (WF)	4	PHYS 1151 (ND)	3	MATH 2321 (FQ)	4		
GE 1000	1	PHYS 1152 (AD)	1				
GE 1501	4	PHYS 1153	1				
MATH 1341 (FQ)	4	General Elective	4				
		17			17	8	8
Year 2							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CIVE 2334	4	CIVE 2260	4	General Elective	4	Co-op	0
CIVE 2335	4	CIVE 2261 (AD)	1	General Elective	4		
GE 3300	4	CIVE 2331	4				
MATH 2341	4	CIVE 3435	4				
		ENCP 2000	1				
		Science Elective (Earth)	4				
		16			18	8	0
Year 3							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op	0	CIVE 3430	4	ENGW 3302 or 3315 (WD)	4	Co-op	0
		CIVE 4534 (WI)	3	General Elective	4		
		CIVE 4535	1				
		Civil Tech. Elective	4				
		Civil Tech. Elective	4				
		0			16	8	0
Year 4							
Fall	Hours	Spring	Hours				
Co-op	0	CIVE 3464	4				

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CIVE 4765 (EI, WI, CE)	5
CIVE 5300	2
CIVE 5301	2
ENCP 3000	1
Civil Tech. Elective	3
0	17

Total Hours: 133

**FOUR YEARS, TWO CO-OPS IN SUMMER 1 / SPRING**

**Year 1**

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CHEM 1151 (ND)		4 GE 1502 (ER)		4 CIVE 2221		4 General Elective	4
CHEM 1153	0	MATH 1342 (FQ)		4 CIVE 2222		0 General Elective	4
ENGW 1111 (WF)	4	PHYS 1151 (ND)		3 MATH 2321 (FQ)		4	
GE 1000	1	PHYS 1152 (AD)		1			
GE 1501	4	PHYS 1153		1			
MATH 1341 (FQ)	4	General Elective		4			
	17			17		8	8

**Year 2**

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CIVE 2260		4 Co-op		Co-op		General Elective	4
CIVE 2261 (AD)	1					General Elective	4
CIVE 2334	4						
CIVE 2335	4						
ENCP 2000	1						
MATH 2341	4						
	18			0		0	8

**Year 3**

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CIVE 2331		4 Co-op		Co-op		ENGW 3302 or 3315 (WD)	4
CIVE 3435	4					General Elective	4
GE 3300	4						
Science Elective (Earth)	4						
	16			0		0	8

**Year 4**

Fall	Hours	Spring	Hours
CIVE 3430		4 CIVE 3464	4
CIVE 4534 (WI)	3	CIVE 4765 (EI, WI, CE)	5
CIVE 4535	1	CIVE 5300	2
Civil Tech. Elective	4	CIVE 5301	2
Civil Tech. Elective	4	ENCP 3000	1
		Civil Tech. Elective	3
	16		17

Total Hours: 133

**FIVE YEARS, THREE CO-OPS IN SUMMER 2 / FALL**

**Year 1**

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CHEM 1151 (ND)		4 GE 1502 (ER)		4 Vacation		0 Vacation	0
CHEM 1153	0	MATH 1342 (FQ)		4			
GE 1000	1	PHYS 1151 (ND)		3			
GE 1501	4	PHYS 1152 (AD)		1			

ENGW 1111 (WF)	4	PHYS 1153	1				
MATH 1341 (FQ)	4	General Elective	4				
	17		17		0		0

**Year 2**

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CIVE 2221		4 CIVE 2260		4 Vacation		0 Co-op	0
CIVE 2222	0	CIVE 2261 (AD)		1			
CIVE 2334	4	CIVE 2331		4			
GE 3300	4	CIVE 2335		4			
MATH 2321 (FQ)	4	ENCP 2000		1			
		MATH 2341		4			
	16		18		0		0

**Year 3**

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op	0	CIVE 3430		4 General Elective		4 Co-op	0
		CIVE 3435		4 General Elective		4	
		Civil Tech. Elective		4			
		Science Elective (Earth)		4			
	0		16		8		0

**Year 4**

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op	0	CIVE 3464		4 General Elective		4 Co-op	0
		CIVE 4534 (WI)		3 General Elective		4	
		CIVE 4535		1			
		ENCP 3000		1			
		ENGW 3302 or 3315 (WD)		4			
		Civil Tech. Elective		4			
	0		17		8		0

**Year 5**

Fall	Hours	Spring	Hours
Co-op	0	CIVE 4765 (EI, WI, CE)	5
		CIVE 5300	2
		CIVE 5301	2
		Civil Tech. Elective	3
		General Elective	4
	0		16

Total Hours: 133

**FIVE YEARS, THREE CO-OPS IN SUMMER 1 / SPRING**

**Year 1**

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CHEM 1151 (ND)	4	GE 1502 (ER)		4 Vacation		Vacation	
CHEM 1153	0	MATH 1342 (FQ)		4			
ENGW 1111 (WF)	4	PHYS 1151 (ND)		3			
GE 1000	1	PHYS 1152 (AD)		1			
GE 1501	4	PHYS 1153		1			
MATH 1341 (FQ)	4	General Elective		4			
	17		17		0		0

**Year 2**

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CIVE 2221	4	Co-op		Co-op		Vacation	
CIVE 2222	0						

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CIVE 2260	4							
CIVE 2261 (AD)	1							
CIVE 2334	4							
ENCP 2000	1							
MATH 2321 (FQ)	4							
	18			0		0		0
<b>Year 3</b>								
<b>Fall</b>	<b>Hours</b>	<b>Spring</b>		<b>Hours</b>	<b>Summer 1</b>		<b>Hours</b>	<b>Summer 2</b>
								<b>Hours</b>
CIVE 2331	4	Co-op			Co-op			General Elective
CIVE 2335	4							General Elective
GE 3300	4							
MATH 2341	4							
	16			0		0		8
<b>Year 4</b>								
<b>Fall</b>	<b>Hours</b>	<b>Spring</b>		<b>Hours</b>	<b>Summer 1</b>		<b>Hours</b>	<b>Summer 2</b>
								<b>Hours</b>
CIVE 3430	4	Co-op			Co-op			General Elective
CIVE 3435	4							General Elective
Civil Tech. Elective	4							
Science Elective (Earth)	4							
	16			0		0		8
<b>Year 5</b>								
<b>Fall</b>	<b>Hours</b>	<b>Spring</b>		<b>Hours</b>				
CIVE 3464	4	CIVE 4765 (EI, WI, CE)		5				
CIVE 4534 (WI)	3	CIVE 5300		2				
CIVE 4535	1	CIVE 5301		2				
ENCP 3000	1	Civil Tech. Elective		3				
ENGW 3302 or 3315 (WD)	4	General Elective		4				
Civil Tech. Elective	4							
	17			16				

Total Hours: 133