

# Environmental Engineering and Health Science, BSEnvE

This intercollege combined major is designed for students who would like to explore their interest in the health sciences while earning the benefit of a Bachelor of Science degree in environmental engineering. The combined major reflects the respective departmental thrusts in environmental health and sustainable resource engineering to create awareness about the complex relationship between the environment and human health, prepare professionals in this growing area capable of providing engineering solutions to current and emerging topics related to environmental engineering and health sciences, and maintain healthy environmental systems by applying and developing techniques to reduce exposure to health hazards. This program combines the content of two majors to allow students to learn the breadth and depth of the convergence between public health and environmental engineering.

## 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.

## University-Wide Requirements

All undergraduate students are required to complete the University-Wide 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/>).

## Engineering Requirement

Complete 61 semester hours in engineering as indicated below.

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	Environmental Engineering Laboratory	4
GE 3300	Energy Systems: Science, Technology, and Sustainability	4
<b>Environmental Engineering Technical Electives</b>		
Complete three of the following:		11-12
CIVE 4575	Construction Management	
CIVE 5260	Environmental Fluid Mechanics	

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 5536	Hydrologic and Hydraulic Design
CIVE 5699	Special Topics in Civil Engineering (Climate Science and Technology Adaptation and Policy)

## Supplemental Credit

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
3 semester hours from the following course count toward the engineering requirement:	3
GE 1502	Cornerstone of Engineering 2

## Professional Development

Code	Title	Hours
<b>Professional Development</b>		
GE 1000	Introduction to the Study of Engineering	1
CIVE 2000	Introduction to Engineering Co-op Education	1
CIVE 3000	Professional Issues in Engineering	1

## Additional Required Courses

The remaining credit from the following course will apply to the professional development area:	1
GE 1501	Cornerstone of Engineering 1
The remaining credit from the following course will apply to the professional development area:	1
GE 1502	Cornerstone of Engineering 2

## Supporting Courses: Mathematics/Science

Complete 35 semester hours in mathematics and science as indicated below<sup>1</sup>.

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

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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

**Science Elective (Earth)**

Complete one of the following:		4-5
ENVR 1110	Global Climate Change	
ENVR 1112	Environmental Geology	
ENVR 1120	Oceans and Coasts	
ENVR 1200	Dynamic Earth	
ENVR 1202	History of Earth and Life	
ENVR 2310	Earth Materials	
ENVR 3125	Global Oceanic Change	

**Supplemental Credit**

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	

**Writing Requirement and NUPath Courses**

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

**Health Sciences Major Requirement**

Complete 35 semester hours in health sciences as indicated below <sup>2</sup>.

Code	Title	Hours
PHTH 1260	The American Healthcare System	4
or PHTH 1261	Comparative Healthcare Systems	
PHTH 2210	Foundations of Biostatistics	4
PHTH 2350	Community and Public Health	4
or PHTH 2351	Community and Public Health - Global	
PHTH 2414	Environmental Health	4
PHTH 2515	Healthcare Policy and Administration	4
PHTH 4120	Global Perspectives on Discrimination and Health	4
PHTH 4540	Health Education and Program Planning	4
PHTH 5214	Environmental Health	3

HLTH 5450	Healthcare Research (Principles of Epidemiology in Medicine and Public Health)	4
or PHTH 4202	Principles of Epidemiology in Medicine and Public Health	

**Integrative Course**

Code	Title	Hours
CIVE 4765	Senior Design Project—Environmental	

**Engineering GPA Requirement**

A minimum 2.000 GPA is required in major (CIVE) courses

**Health Sciences Major Requirement**

A minimum grade of C or higher is required for all HLTH and PHTH courses.

**Program Requirement**

144 total semester hours required

**Note:**

<sup>1</sup> Mathematics/Science Requirement: CHEM 1151, MATH 1341, and PHYS 1151 require a grade of C- or higher

<sup>2</sup> Health Sciences Major Requirement: HLTH and PHTH courses require a grade of C or higher

**Plan of Study**

**Year 1**

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CHEM 1151 (ND)	4	MATH 1342 (FQ)	4	PHTH 1260	4	Vacation	
CHEM 1153	0	GE 1502 (ER)	4	MATH 2321 (FQ)	4		
MATH 1341 (FQ)	4	PHYS 1151	3				
GE 1501	4	PHYS 1152	1				
GE 1000	1	PHYS 1153	1				
ENGW 1111 (WF)	4	PHTH 2210	4				
	17		17		8		0

**Year 2**

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CIVE 2334	4	PHTH 2414	4	PHTH 2350	4	Co-op	
CIVE 2260	4	CIVE 2000	1	MATH 2341	4		
CIVE 2261 (AD)	1	CIVE 2331	4				
CIVE 2221	4	CIVE 2335	4				
CIVE 2222	0	CIVE 3430	4				
PHTH 2515	4						
	17		17		8		0

**Year 3**

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op		CIVE 3435	4	GE 3300	4	Co-op	
		Technical elective 1 of 3	4	Science elective (Earth)	4		

	HLTH 5450 or PHTH 4202	4		
	PHTH 4120	4		
	0	16	8	0

**Year 4**

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op		CIVE 3000	1	Vacation		Co-op	
ENGW 3302 (WD)	4	CIVE 3464	4				
		Technical Elective 2 of 3	4				
		CIVE 4534 (WI)	3				
		CIVE 4535	1				
		PHTH 4540	4				
	4		17		0		0

**Year 5**

Fall	Hours	Spring	Hours
Co-op		Technical Elective 3 of 3	3
		CIVE 5300	4
		PHTH 5214	3
		CIVE 4765 (EI, WI, CE)	5
	0		15

Total Hours: 144