

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.

Our BS Environmental Engineering and Health Sciences program is ABET accredited. Visit the department website (<https://cee.northeastern.edu/academics/undergraduate-studies/cee-accreditation/>) for program objectives.

Program Requirements

- Concentrations and course offerings may vary by campus and/or by program modality. Please consult with your advisor or admissions coach for the course availability each term at your campus or within your program modality.
- Certain options within the program may be *required* at certain campuses or for certain program modalities. Please consult with your advisor or admissions coach for requirements at your campus or for your program modality.

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 (<https://catalog.northeastern.edu/undergraduate/university-academics/university-wide-requirements/>).

NUpath Requirements

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

NUpath requirements: Interpreting Culture (IC), Understanding Societies and Institutions (SI), Engaging Differences and Diversity (DD), and Integrating Knowledge and Skills Through Experience (EX) are not explicitly satisfied by required engineering coursework. Successful completion of a cooperative education experience fulfills the EX requirement. Students are responsible for satisfying unfulfilled NUpath requirements with general elective coursework.

Engineering Requirements

Code	Title	Hours
Required Engineering		
CIVE 2221 and CIVE 2222	Statics and Solid Mechanics and Recitation for CIVE 2221	4
CIVE 2300 and CIVE 2301	Environmental Measurements in Natural and Engineered Systems and Lab for CIVE 2300	4
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
GE 3300	Energy Systems: Science, Technology, and Sustainability	4
Technical Electives		
Complete 8-9 semester hours from the following:		8-9
CIVE 2260 and CIVE 2261	Materials for the Built Environment and Lab for CIVE 2260	
CIVE 2340 and CIVE 2341	Geotechnical Engineering and Lab for CIVE 2340	

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CIVE 3335	Environmental Engineering Chemistry and Chemical Technologies
CIVE 4540	Resource Recovery and Waste Treatment Technologies Abroad
CIVE 4566	Design for Sustainable Transportation: Netherlands
CIVE 4777	Climate Hazards and Resilient Cities Abroad
CIVE 5150	Climate and Atmospheric Change
CIVE 5250	Organic Pollutants in the Environment
CIVE 5255	Tools and Techniques of Environmental Health
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 5366	Air Quality Engineering and Science
CIVE 5536	Hydrologic and Hydraulic Design
CIVE 5670	Global Biogeochemistry

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 3430	Engineering Microbiology and Ecology
2 semester hours from the following course count toward the engineering requirement:	2
GE 1501	Cornerstone of Engineering 1 ¹
3 semester hours from the following course count toward the engineering requirement:	3
GE 1502	Cornerstone of Engineering 2 ¹

Health Sciences Major Requirements

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 4202	Principles of Epidemiology in Medicine and Public Health	4
PHTH 4540	Health Education and Program Planning	4
PHTH 5214	Environmental Health	3-4
or CIVE 5255	Tools and Techniques of Environmental Health	

Supporting Courses: Mathematics/Science

Complete all Mathematics/Science courses with a minimum of 30 semester hours.²

Code	Title	Hours
Required Mathematics/Science		
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
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Science Elective (Earth)

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	

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	
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1 semester hour from the following course counts toward the mathematics/science requirement: 1

CIVE 3430	Engineering Microbiology and Ecology	
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1 semester hour from the following course counts toward the mathematics/science requirement: 1

GE 1501	Cornerstone of Engineering 1 ¹	
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Professional Development

Code	Title	Hours
Professional Development		
ENCP 2000	Introduction to Engineering Co-op Education	1
ENCP 3000	Professional Issues in Engineering	1
GE 1000	First-Year Seminar	1

Additional Required Courses

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

GE 1501	Cornerstone of Engineering 1 ¹	
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1 semester hour from the following course counts toward the professional development requirement: 1

GE 1502	Cornerstone of Engineering 2 ¹	
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Writing Requirements

Code	Title	Hours
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 3303	Advanced Writing in the Environmental Professions	
or ENGW 3315	Interdisciplinary Advanced Writing in the Disciplines	

Integrative Course

Code	Title	Hours
This course is already required above and also fulfills the integrative requirement.		
CIVE 4765	Senior Design Project—Environmental	

Engineering GPA Requirement

A minimum 2.000 GPA is required in CIVE coursework

Health Sciences Major Requirement

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

Program Requirement

132 total semester hours required

¹ 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).

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2 Mathematics/Science Requirement: CHEM 1151, MATH 1341, and PHYS 1151 require a grade of C- or higher.

Plan of Study

Sample Plans of Study

FOUR YEARS, 1 CO-OP SUMMER 2/FALL

Year 1							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CHEM 1151 (ND)		4 GE 1502 (ER)		4 MATH 2321 (FQ)		4 Vacation	
CHEM 1153		0 MATH 1342 (FQ)		4 PHTH 1260 (SI)		4	
ENGW 1111 (WF)		4 PHTH 2210 (FQ, AD)		4			
GE 1000		1 PHYS 1151 (ND)		3			
GE 1501		4 PHYS 1152 (AD)		1			
MATH 1341 (FQ)		4 PHYS 1153		1			
		17		17		8	0
Year 2							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CIVE 2221		4 CIVE 2331		4 MATH 2341		4 Co-op	0
CIVE 2222		0 CIVE 3430		4 PHTH 2350 (SI)		4	
CIVE 2334		4 ENCP 2000		1			
CIVE 2300 and CIVE 2301		4 PHTH 2414		4			
PHTH 2515		4 CIVE 3464		4			
		16		17		8	0
Year 3							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op		0 CIVE 3435		4 Vacation		Vacation	
		GE 3300		4			
		PHTH 4120 (IC, DD)		4			
		PHTH 4202		4			
		0		16		0	0
Year 4							
Fall	Hours	Spring	Hours				
CIVE 4534 (WI)		3 CIVE 4765 (EI, WI, CE)		5			
CIVE 4535		1 PHTH 5214 or CIVE 5255		3			
ENCP 3000		1 Science Elective (Earth)		4			
ENGW 3302 or 3315 (WD)		4 Environmental Tech. Elective		4			
PHTH 4540 (WI)		4					
Environmental Tech. Elective		4					
		17		16			

Total Hours: 132

FOUR YEARS, 1 CO-OP SPRING/SUMMER 1

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

Year 2							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CIVE 2221		4 CIVE 2331		4 MATH 2341		4 Vacation	
CIVE 2222		0 CIVE 3430		4 PHTH 2350 (SI)		4	
CIVE 2334		4 ENCP 2000		1			
CIVE 2300 and CIVE 2301		4 PHTH 2414		4			
PHTH 2515		4 CIVE 3464		4			
		16		17		8	0
Year 3							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CIVE 3435		4 Co-op		0 Co-op		0 Vacation	
GE 3300		4					
PHTH 4120		4					
PHTH 4202		4					
		16		0		0	0
Year 4							
Fall	Hours	Spring	Hours				
CIVE 4534 (WI)		3 CIVE 4765 (EI, WI, CE)		5			
CIVE 4535		1 PHTH 5214 or CIVE 5255		3			
ENCP 3000		1 Science Elective (Earth)		4			
ENGW 3302 or 3315 (WD)		4 Environmental Tech. Elective		4			
PHTH 4540 (WI)		4					
Environmental Tech. Elective		4					
		17		16			

Total Hours: 132

FIVE YEARS, 3 CO-OPS SUMMER 2/FALL

Year 1							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CHEM 1151 (ND)		4 GE 1502 (ER)		4 MATH 2321 (FQ)		4 Vacation	
CHEM 1153		0 MATH 1342 (FQ)		4 PHTH 1260 (SI)		4	
ENGW 1111 (WF)		4 PHTH 2210 (FQ, AD)		4			
GE 1000		1 PHYS 1151 (ND)		3			
GE 1501		4 PHYS 1152 (AD)		1			
MATH 1341 (FQ)		4 PHYS 1153		1			
		17		17		8	0
Year 2							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CIVE 2221		4 CIVE 2331		4 MATH 2341		4 Co-op	
CIVE 2222		0 CIVE 3430		4 PHTH 2350 (SI)		4	
CIVE 2334		4 CIVE 3464		4			
CIVE 2300 and CIVE 2301		4 ENCP 2000		1			
PHTH 2515		4 PHTH 2414		4			
		16		17		8	0
Year 3							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op		0 CIVE 3435		4 Vacation		Co-op	
		GE 3300		4			
		PHTH 4540 (WI)		4			

		PHTH 4202		4				
				0		16		0
								0
Year 4								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
Co-op	0	CIVE 4534 (WI)		3	Vacation		Co-op	0
		CIVE 4535		1				
		ENCP 3000		1				
		ENGW 3302 or 3315 (WD)		4				
		PHTH 4120 (IC, DD)		4				
		Environmental Tech. Elective		4				
				0		17		0
Year 5								
Fall	Hours	Spring	Hours					
Co-op	0	CIVE 4765 (EI, WI, CE)		5				
		PHTH 5214 or CIVE 5255		3				
		Science Elective (Earth)		4				
		Environmental Tech. Elective		4				
				0		16		0

Total Hours: 132

FIVE YEARS, 3 CO-OPS SPRING/SUMMER 1

Year 1								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
CHEM 1151 (ND)	4	GE 1502 (ER)		4	MATH 2321 (FQ)	4	Vacation	
CHEM 1153	0	MATH 1342 (FQ)		4	PHTH 1260 (SI)	4		
ENGW 1111 (WF)	4	PHTH 2414		4				
GE 1000	1	PHYS 1151 (ND)		3				
GE 1501	4	PHYS 1152 (AD)		1				
MATH 1341 (FQ)	4	PHYS 1153		1				
	17			17		8		0
Year 2								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
CIVE 2221	4	Co-op		0	Co-op	0	MATH 2341	4
CIVE 2222	0						ENGW 3302	4
CIVE 2334	4							
CIVE 2300 and CIVE 2301	4							
PHTH 2210	4							
ENCP 2000	1							
	17			0		0		8
Year 3								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
CIVE 2331	4	Co-op		0	Co-op	0	Vacation	
CIVE 3430	4							
CIVE 3464	4							
PHTH 2515	4							
	16			0		0		0
Year 4								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
CIVE 3435	4	Co-op		0	Co-op	0	Vacation	
GE 3300	4							

PHTH 2350	4				
Science Elective (Earth)	4				
	16		0	0	0

Year 5					
Fall	Hours	Spring	Hours		
CIVE 4534	3	CIVE 4765 (EI, WI, CE)	5		
CIVE 4535	1	PHTH 5214 or CIVE 5255	3		
ENCP 3000	1	PHTH 4202	4		
PHTH 4120	4	Environmental Tech. Elective	4		
PHTH 4540	4				
Environmental Tech. Elective	4				
	17		16		

Total Hours: 132