

Environmental Engineering and Health Science, BS

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>).

Major GPA Requirement

2.000 minimum required in major (CIVE) courses

Engineering

Complete 65 semester hours in engineering as indicated below.

Code	Title	Hours
Required Engineering		
CIVE 2221 and CIVE 2222	Statics and Strength of Materials and Recitation for CIVE 2221	4
CIVE 2260 and CIVE 2261	Civil Engineering Materials and Materials and Measurements Lab	5
CIVE 2331	Fluid Mechanics	4
CIVE 2334	Environmental Engineering 1	4
CIVE 2335	Environmental Engineering Chemistry	4
CIVE 3430	Engineering Microbiology and Ecology	4
CIVE 3435	Environmental Pollution Fate and Transport	4
CIVE 4534 and CIVE 4535	Environmental Engineering 2 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

Environmental Engineering Technical Electives

Complete 12 semester hours from the following:		12
CIVE 5250	Organic Pollutants in the Environment	
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 Engineering	
CIVE 5699	Special Topics in Civil Engineering (Groundwater and Contamination)	
CIVE 5699	Special Topics in Civil Engineering (Coastal Dynamic and Design Practice)	
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
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
Professional Development		
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	

Supporting Courses: Mathematics/Science

Complete 33 semester hours in mathematics and science as indicated below.

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 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
GE 1502	Cornerstone of Engineering 2	

Writing Requirement and NUPath Courses

Code	Title	Hours
Writing		
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	

NUPath Requirements through General Electives

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.

Health Sciences Major Requirement

Code	Title	Hours
HLTH 5450	Healthcare Research	4
PHTH 4120	Global Perspectives on Discrimination and Health	4
PHTH 5214	Environmental Health	3
PHTH 1260	The American Healthcare System	4
PHTH 2210	Foundations of Biostatistics	4
PHTH 2350	Community and Public Health	4
PHTH 2414	Environmental Health	4
PHTH 2515	Healthcare Policy and Administration	4
PHTH 4540	Health Education and Program Planning	4

Integrative Course

Code	Title	Hours
CIVE 4765	Senior Design Project—Environmental	5

Course Work That Does Not Count Toward the Engineering Degree

Students in engineering are allowed to count a maximum of two pass/fail courses toward their degree program. Only general electives outside the College of Engineering may be taken on a pass/fail grading basis. A maximum of one pass/fail course is allowed per semester.

Program Requirement

145 total semester hours required

Plan of Study

Year 1

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
MATH 1241	4	MATH 1342	4	PHTH 1260	4	Vacation	
CHEM 1151 and CHEM 1153	4	GE 1502	4	MATH 2321	4		
GE 1501	4	PHYS 1151 and PHYS 1152 and PHYS 1153	5				
GE 1000	1	PHTH 2210	4				
ENGW 1111	4						
		17		17		8	

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 and CIVE 2261	5	CIVE 2000	1	MATH 2341	4		
CIVE 2221 and CIVE 2222	4	CIVE 2331	4				
PHTH 2515	4	CIVE 2335	4				
		CIVE 3430	4				
		17		17		8	

Year 3

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op		CIVE 3435	4	GE 3300	4	Co-op	
		Technical elective	4	Science elective	4		
		PHTH 4540	4				
		HLTH 5450	4				
		0		16		8	

Year 4

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op		CIVE 3000	1	Vacation		Co-op	
		CIVE 3464	4			ENGW 3302	4
		Technical elective	4				
		CIVE 4534 and CIVE 4535	4				
		PHTH 4120	4				
		0		17		0	

Year 5		
Fall	Hours Spring	Hours
Co-op	Technical elective	4
	CIVE 5300	4
	PHTH 5214	3
	CIVE 4765	5
	0	16

Total Hours: 145