

Civil Engineering and Architectural Studies, BSCE

Civil engineering and architecture are two important disciplines that deal with the process of creating the built environment to satisfy societal needs. Both professions have critical functions that are essential in the development of society in terms of planning cities and designing more resilient infrastructure and rely on one another to accomplish it. The combination of these two professions creates great synergy as architects focus more on the functional and human aspects of development, while civil engineers concentrate on the structural elements of the design, ensuring durable structures that perform under normal and extreme loads.

Students successfully completing the program receive a rigorous engineering training education, enabling a high level of engineering knowledge as well as exposure to a broad range of architectural topics and design experiences.

Students also have the opportunity to undertake a co-op experience consistent with the policies and opportunities offered within the College of 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 56 semester hours in engineering as indicated below.

Code	Title	Hours
Required Engineering		
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 2320 and CIVE 2321	Structural Analysis and Recitation for CIVE 2320	4
CIVE 2324 or CIVE 3425	Concrete Structure Design Steel Structure Design	4
CIVE 2331	Fluid Mechanics and Hydraulics	4
CIVE 2334	Environmental Engineering: Principles, Technology, and Sustainability	4
CIVE 2340 and CIVE 2341	Geotechnical Engineering and Lab for CIVE 2340	5
GE 3300	Energy Systems: Science, Technology, and Sustainability	4
Civil Engineering Project Elective		

Complete one of the following: 4

CIVE 4534 and CIVE 4535	Water Treatment Systems Design and Lab for CIVE 4534	
CIVE 4542	Foundation Engineering and Design	
CIVE 4554	Highway Design	
CIVE 5536	Hydrologic and Hydraulic Design	

Senior Design Project

CIVE 4767 Senior Design Project—Structural 5

Civil Engineering Technical Electives

Complete two of the following: 7-8

CIVE 2324	Concrete Structure Design	
CIVE 3425	Steel Structure Design	
CIVE 3435	Environmental Pollution Fate and Transport	
CIVE 4540	Resource Recovery and Waste Treatment Technologies Abroad	
CIVE 4542	Foundation Engineering and Design	
CIVE 4554	Highway Design	
CIVE 4566	Design for Sustainable Transportation: Netherlands	
CIVE 4575	Construction Management	
CIVE 4777	Climate Hazards and Resilient Cities Abroad	
CIVE 5221	Construction Project Control and Organization	
CIVE 5231	Alternative Project Delivery Systems in Construction	
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 5300	Environmental Engineering Laboratory	
CIVE 5373	Transportation Systems: Analysis and Planning	
CIVE 5376	Traffic Engineering and Sustainable Urban Street Design	
CIVE 5522	Structural Systems Modeling	
CIVE 5525	Prestressed Concrete Design	
CIVE 5536	Hydrologic and Hydraulic Design	
CIVE 5699	Special Topics in Civil Engineering (Vibration-based Structural Health Monitoring)	
CIVE 5699	Special Topics in Civil Engineering (Building Energy Performance Simulation)	
SBSY 5100	Sustainable Design and Technologies in Construction	
SBSY 5200	Sustainable Engineering Systems for Buildings	

SBSY 5300	Information Systems for Integrated Project Delivery	
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Supplemental Credit

1 semester hour from the following course counts toward the engineering requirement: 1

CIVE 3464	Probability and Engineering Economy for Civil Engineering	
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2 semester hours from the following course count toward the engineering requirement: 2

GE 1501	Cornerstone of Engineering 1	
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3 semester hours from the following course count toward the engineering requirement: 3

GE 1502	Cornerstone of Engineering 2	
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Professional Development

Code	Title	Hours
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Professional Development

GE 1000	Introduction to the Study of Engineering	1
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CIVE 2000	Introduction to Engineering Co-op Education	1
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CIVE 3000	Professional Issues in Engineering	1
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Additional Required Courses

The remaining credit from the following course will apply to the professional development area: 1

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

GE 1502	Cornerstone of Engineering 2	
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Supporting Courses: Mathematics/Science

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

Code	Title	Hours
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Required Mathematics/Science

Complete one of the following: 4

CHEM 1151 and CHEM 1153	General Chemistry for Engineers and Recitation for CHEM 1151	
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CHEM 1211 and CHEM 1212 and CHEM 1213	General Chemistry 1 and Lab for CHEM 1211 and Recitation for CHEM 1211	
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CHEM 1214 and CHEM 1215 and CHEM 1216	General Chemistry 2 and Lab for CHEM 1214 and Recitation for CHEM 1214	
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MATH 1341	Calculus 1 for Science and Engineering	4
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MATH 1342	Calculus 2 for Science and Engineering	4
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MATH 2321	Calculus 3 for Science and Engineering	4
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MATH 2341	Differential Equations and Linear Algebra for Engineering	4
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Complete one of the following: 5

PHYS 1151 and PHYS 1152 and PHYS 1153	Physics for Engineering 1 and Lab for PHYS 1151 and Interactive Learning Seminar for PHYS 1151	
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PHYS 1161 and PHYS 1162 and PHYS 1163	Physics 1 and Lab for PHYS 1161 and Recitation for PHYS 1161	
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Science Elective

Complete one of the following: 4-5

BIOL 1111 and BIOL 1112	General Biology 1 and Lab for BIOL 1111	
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BIOL 1115 and BIOL 1116	General Biology 1 for Engineers and Lab for BIOL 1115	
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BIOL 1117 and BIOL 1118	Integrated Anatomy and Physiology 1 and Lab for BIOL 1117	
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BIOL 1121 and BIOL 1122	Basic Microbiology and Lab for BIOL 1121	
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BIOL 1141	Microbes and Society	
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BIOL 1143	Biology and Society	
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CHEM 2311 and CHEM 2312 and CHEM 2319	Organic Chemistry 1 and Lab for CHEM 2311 and Recitation for CHEM 2311	
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ENVR 1110	Global Climate Change	
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ENVR 1120	Oceans and Coasts	
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ENVR 1200	Dynamic Earth	
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ENVR 1202	History of Earth and Life	
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ENVR 2310	Earth Materials	
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ENVR 3418	Geophysics	
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ENVR 4515	Sustainable Development	
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PHYS 1111	Astronomy	
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PHYS 2303	Modern Physics	
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PHYS 2305	Thermodynamics and Statistical Mechanics	
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PHYS 3601	Classical Dynamics	
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PHYS 4623	Medical Physics	
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PHYS 5111	Astrophysics and Cosmology	
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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

GE 1501	Cornerstone of Engineering 1	
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Engineering GPA Requirement

Minimum 2.000 GPA required in all major courses

Architecture Requirements

Code	Title	Hours
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ARCH 1110	Fundamental Architectural Representation	4
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ARCH 1120	Fundamental Architectural Design	6
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ARCH 1310	Buildings and Cities, A Global History	4
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ARCH 2130	Site, Space, and Program	6
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ARCH 2140	Urban Institutions	6
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ARCH 2340	Architecture, Modernity, and the City, 1910 to 1980	4
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ARCH 3210	Environmental Systems	4
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Architectural Electives

Complete two of the following: 8

ARCH 3370	Topics in Architectural History	
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ARCH 3450	Advanced Architectural Communication	
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ARCH 5115	Option Studio	
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ARCH 5220 Integrated Building Systems

ARCH 5310 Design Tactics and Operations

ARCHITECTURE GPA REQUIREMENT

Minimum 2.000 GPA required in all major courses

Integrative Courses

Code	Title	Hours
CIVE 4767	Senior Design Project—Structural	

Writing Requirement and NUpath Courses

Code	Title	Hours
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Writing

A grade of C or higher is required:

ENGW 1111	First-Year Writing	4
ENGW 3302	Advanced Writing in the Technical Professions	4

NUpath Requirements

For this combined major, Nupath requirements are satisfied in several courses across the program and by required courses in the combined major.

Program Requirements

144 total semester hours required

Note:

- Students who wish to be considered for the two-year Master of Architecture Program at Northeastern **SHOULD** take ARCH 3450 as an elective and **SHOULD NOT** take ARCH 5115 or ARCH 5220 as architectural electives.
- Students who wish to be considered for the two-year Master of Architecture Program at Northeastern **MUST** have satisfied the Structural Systems (ARCH 5230) requirement. This requirement is achieved in this combined major by taking the following three courses, as follows:
 - CIVE 2221 Statics and Solid Mechanics (including recitation CIVE 2222)
 - CIVE 2320 Structural Analysis (including recitation CIVE 2321)
 - And at least one design course from the following:
 - CIVE 2324 Concrete Structure Design
 - CIVE 3425 Steel Structure Design

Plan of Study**Year 1**

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
MATH 1341 (FQ)	4	MATH 1342 (FQ)	4	PHYS 1151	3	Vacation	
CHEM 1151 (ND)	4	GE 1502	4	PHYS 1152	1		
CHEM 1153	0	ARCH 1110 (EI)	4	PHYS 1153	1		
GE 1000	1	ARCH 1120 (ND, EI)	6	MATH 2321	4		
GE 1501	4						
ENGW 1111 (WF)	4						
	17		18		9		0

Year 2

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
MATH 2341	4	CIVE 2000	1	Vacation		Co-op	
CIVE 2221	4	CIVE 2260	4				
CIVE 2222	0	CIVE 2261 (AD)	1				
ARCH 1310 (IC, DD)	4	CIVE 2320	4				
ARCH 2130	6	CIVE 2321	0				
		CIVE 2334	4				
		GE 3300	4				
	18		18		0		0

Year 3

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op		CIVE 2331	4	CIVE 2324	4	Co-op	
		CIVE 2340	4	Science elective	4		
		CIVE 2341	1				
		Technical elective 1 of 2	4				
		ARCH 2340 (IC, SI, WI)	4				
	0		17		8		0

Year 4

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op		ARCH 2140	6	Vacation		ENGW 3302 (WD)	4
		ARCH 3210 (ND, AD)	4			Co-op	
		CIVE 3000	1				
		CIVE 3464	4				
		Project elective (WI)	4				
	0		19		0		4

Year 5

Fall	Hours	Spring	Hours
Co-op		CIVE 4767 (EI, WI, CE)	5
		Technical elective 2 of 2	3
		ARCH elective 1 of 2	4
		ARCH elective 2 of 2	4
	0		16

Total Hours: 144