

Mechanical Engineering and Computer Science, BSME

The combined major in mechanical engineering and computer science provides expertise in both disciplines. Mechanical engineering involves the design, development, and manufacture of machinery and devices to transmit power or to convert energy from thermal to mechanical form in order to power the modern world and its machines. Its current practice has been heavily influenced by recent advances in computer hardware and software.

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 may fulfill the EX requirement. Students are responsible for satisfying unfulfilled NUpath requirements with general elective coursework.

Engineering Requirements

Code	Title	Hours
Required Engineering		
ME 2340 and ME 2341	Introduction to Material Science and Lab for ME 2340	5
ME 2350	Statics	4
ME 2355 and ME 2356	Mechanics of Materials and Lab for ME 2355	5
ME 2380 and ME 2381	Thermodynamics and Recitation for ME 2380	4
ME 3455 and ME 3456	Dynamics and Lab for ME 3455	5
ME 3475	Fluid Mechanics	4
ME 4505 and ME 4506	Measurement and Analysis with Thermal Science Application and Lab for ME 4505	5
Senior Capstone Design Project		
MEIE 4701	Capstone Design 1	1
MEIE 4702	Capstone Design 2	5
Upper Mechanical Electives		
Complete two of the following (at least one must be ME 4550 or ME 4570):		8
ME 4508 or ME 4565	Mechanical Engineering Computation and Design Introduction to Computational Fluid Dynamics	
ME 4550	Mechanical Engineering Design	
ME 4555	System Analysis and Control	
ME 4570	Thermal Systems Analysis and Design	
Supplemental Credit		

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2 semester hours from the following count toward the engineering requirement: 2

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

GE 1502	Cornerstone of Engineering 2 ¹	
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Computer Science Requirements

Code	Title	Hours
Computer Science Fundamental Courses		
CS 1800 and CS 1802	Discrete Structures and Seminar for CS 1800	5
CS 2500 and CS 2501	Fundamentals of Computer Science 1 and Lab for CS 2500	5
CS 2510 and CS 2511	Fundamentals of Computer Science 2 and Lab for CS 2510	5
Computer Science Required Courses		
CS 3000	Algorithms and Data	4
CS 3500 and CS 3501	Object-Oriented Design and Lab for CS 3500	5
CS 3650	Computer Systems	4
CS 4500 or CS 4530	Software Development Fundamentals of Software Engineering	4
CS 4700 or CS 4730	Network Fundamentals Distributed Systems	4

Khoury Elective Courses

Students should plan to take a NUPath capstone using designated courses in either a concentration, computer science electives, or as a general elective.

With advisor approval, directed study, research, project study, and appropriate graduate-level courses may also be taken as upper-division electives.

Complete 4 semester hours of CS, CY, DS, or IS classes that are not already required. Choose courses within the following ranges: 4

CS 2500 or higher, except CS 5010	
CY 2000 or higher	
DS 2500 or higher, except DS 4900	
IS 2000 or higher, except IS 4900	

Supporting Courses: Mathematics/Science

Complete all mathematics/science courses with a minimum of 30 semester hours.

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
PHYS 1155 and PHYS 1156 and PHYS 1157	Physics for Engineering 2 and Lab for PHYS 1155 and Interactive Learning Seminar for PHYS 1155	5

Supplemental Credit

1 semester hour from the following 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 counts toward the professional development requirement:		1
GE 1501	Cornerstone of Engineering 1 ¹	
1 semester hour from the following counts toward the professional development requirement:		1
GE 1502	Cornerstone of Engineering 2 ¹	

Writing Requirements

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

Required General Electives

Code	Title	Hours
Complete 8 semester hours of academic, nonremedial, nonrepetitive courses. Recommend selecting courses to fulfill NUpath DD, SI, and IC.		8

Integrative Courses

Code	Title	Hours
This course is already required above and also fulfills the integrative requirement:		
MEIE 4702	Capstone Design 2	

Major GPA Requirement

2.000 minimum GPA required in IE, ME and MEIE courses

Khoury College GPA Requirement

Minimum cumulative 2.000 GPA required in all CS, CY, DS, and IS courses

Program Requirement

143 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) .

Plan of Study**Sample Plans 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 and CHEM 1153		4 CS 2500 and CS 2501		5 MATH 2321		4 General elective	4
ENGW 1111		4 GE 1502		4 ME 2350		4 General elective	4
GE 1000		1 MATH 1342		4			
GE 1501		4 PHYS 1151 and PHYS 1152 and PHYS 1153		5			
MATH 1341		4					
		17			18		
					8		
						8	

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Year 2								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
CS 2510 and CS 2511		5 CS 1800 and CS 1802		5 CS 3000		4 Co-op		
MATH 2341		4 CS 3500 and CS 3501		5 ME 3475		4		
ME 2380 and ME 2381		4 CS 3650		4				
PHYS 1155 and PHYS 1156 and PHYS 1157		5 ENCP 2000		1				
		ME 2355 and ME 2356		5				
		18			20			8
								0

Year 3								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
Co-op		CS 4500 or 4530		4 MEIE 4701		1 Co-op		
		CS 4700 or 4730		4 Khoury elective		4		
		ME 2340 and ME 2341		5 Upper mechanical elective		4		
		ME 3455 and ME 3456		5				
		0			18			9
								0

Year 4								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
Co-op		ENCP 3000		1				
		ENGW 3302 or 3315		4				
		ME 4505 and ME 4506		5				
		MEIE 4702		5				
		Upper mechanical elective		4				
		0			19			

Total Hours: 143

Four Years, Two Co-ops in Spring/Summer 1

Year 1								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
CHEM 1151 and CHEM 1153		4 CS 2500 and CS 2501		5 ME 2350		4 General elective	4	
ENGW 1111		4 GE 1502		4 MATH 2321		4 General elective	4	
GE 1000		1 MATH 1342		4				
GE 1501		4 PHYS 1151 and PHYS 1152 and PHYS 1153		5				
MATH 1341		4						
		17			18			8

Year 2							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 2510 and CS 2511		5 Co-op		Co-op		ENGW 3302	4
ENCP 2000		1				ME 3475	4
ME 2380 and ME 2381		4					
MATH 2341		4					

PHYS 1155 and PHYS 1156 and PHYS 1157	5							
	19		0		0			8

Year 3

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 1800 and CS 1802	5	Co-op		Co-op		MEIE 4701	1
CS 3500 and CS 3501	5					Upper mechanical elective	4
CS 3650	4					Khoury elective	4
ME 2355 and ME 2356	5						
	19		0		0		9

Year 4

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 3000	4	CS 4500 or 4530	4				
CS 4700 or 4730	4	ENCP 3000	1				
ME 2340 and ME 2341	5	ME 4505 and ME 4506	5				
ME 3455 and ME 3456	5	MEIE 4702	5				
		Upper mechanical elective	4				
	18		19				

Total Hours: 143

Five Years, Three Co-ops in Summer 2/Fall

Year 1

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CHEM 1151 and CHEM 1153	4	CS 1800 and CS 1802	5	Vacation		Vacation	
ENGW 1111	4	GE 1502	4				
GE 1000	1	MATH 1342	4				
GE 1501	4	PHYS 1151 and PHYS 1152 and PHYS 1153	5				
MATH 1341	4						
	17		18		0		0

Year 2

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 2500 and CS 2501	5	CS 2510 and CS 2511	5	Vacation		Co-op	
MATH 2321	4	ENCP 2000	1				
ME 2350	4	MATH 2341	4				
PHYS 1155 and PHYS 1156 and PHYS 1157	5	ME 2355 and ME 2356	5				
		ME 2380 and ME 2381	4				
	18		19		0		0

Year 3

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op		CS 3500 and CS 3501	5	CS 3000		Co-op	4
		CS 3650	4	ME 3475			4

		ME 2340 and ME 2341	5				
		ME 3455 and ME 3456	5				
	0		19		8		0

Year 4

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op		CS 4500 or 4530		4 MEIE 4701		1 Co-op	
		ENCP 3000		1 Upper mechanical elective		4	
		ENGW 3302 or 3315		4 General elective		4	
		ME 4505 and ME 4506		5			
		Upper mechanical elective		4			
	0		18		9		0

Year 5

Fall	Hours	Spring	Hours
Co-op		CS 4700 or 4730	4
		MEIE 4702	5
		General elective	4
		Khoury elective	4
	0		17

Total Hours: 143

Five Years, Three Co-ops in Spring/Summer 1

Year 1

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CHEM 1151 and CHEM 1153		4 CS 1800 and CS 1802		5 Vacation		Vacation	
ENGW 1111		4 GE 1502		4			
GE 1501		4 MATH 1342		4			
GE 1000		1 PHYS 1151 and PHYS 1152 and PHYS 1153		5			
MATH 1341		4					
	17		18		0		0

Year 2

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 2500 and CS 2501		5 Co-op		Co-op		Vacation	
ENCP 2000		1					
ME 2350		4					
MATH 2321		4					
PHYS 1155 and PHYS 1156 and PHYS 1157		5					
	19		0		0		0

Year 3

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 2510 and CS 2511		5 Co-op		Co-op		ME 3475	4
MATH 2341		4				General elective	4
ME 2380 and ME 2381		4					

ME 2355 and ME 2356	5							
	18			0			0	8
Year 4								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	
CS 3000		4 Co-op		Co-op		MEIE 4701		1
CS 3500 and CS 3501	5					Khoury elective		4
CS 3650	4					Upper mechanical elective		4
ME 3455 and ME 3456	5							
	18			0			0	9
Year 5								
Fall	Hours	Spring	Hours					
ME 2340 and ME 2341		5 ENCP 3000		1				
MEIE 4702	5	ENGW 3302 or 3315		4				
CS 4500 or 4530	4	ME 4505 and ME 4506		5				
CS 4700 or 4730	4	General elective		4				
		Upper mechanical elective		4				
	18			18				

Total Hours: 143