

Major in Physics

The Bachelor of Science in Physics prepares students to pursue careers in teaching, research and development, or to go on for further graduate study. The broadly applicable problem-solving and technical skills of Physics graduates are in high demand across diverse sectors, from healthcare to Silicon Valley. All instruction is provided by full-time faculty in small classes, affording many opportunities for close personal contact between students and instructors. All advanced undergraduate courses are given in the evening, allowing students to complete studies on either a full-time or part-time basis. Faculty members are actively engaged in research projects which offer exciting opportunities for student participation.

University Core Curriculum Requirements

General Education Distribution Area	Cr. Hrs.
Fine Arts (FA)*	6
2 courses, from at least two of the following areas of study: Art, CMT (Mass Media or Theatre), Music (includes Dance).	
Humanities (HU)*	9
3 courses, from at least two of the following areas of study: CMT (Communication), English, Linguistics, Philosophy, Women's and Gender Studies, World Languages and Cultures, (Note: No more than two foreign language courses may be used to fulfill this requirement.)	
Behavioral/Social Sciences (SB)*	9
3 courses, from at least two of the following areas of study: African & African American Studies, Anthropology, Computer Science, Economics, Geography & Environmental Studies, History, Justice Studies, Latino & Latin American Studies, Political Science, Psychology, Sociology, Social Work	
Natural Sciences (NS and NSL)**	9
3 courses, from at least two of the following areas of study; one course must have a laboratory component (NSL): Biology, Chemistry, Earth Science, Environmental Science, Physics (Note: If an FYE ANTH that counts as Natural Science is taken, only one Biology course may be used for Natural Science).	

Engaged Learning Experiences

Students must complete, at Northeastern, three courses designated as Engaged Learning Experiences courses. One of the Engaged Learning Experiences courses must be at the 300-level, and one Engaged Learning Experiences course must be designated as "Boundary Crossing".

Discipline Specific (ELE-DS)

These courses have pre-requisites that are specific courses within a program of study. Discipline Specific courses give students a deeper understanding of how knowledge is created and applied in their field.

Boundary Crossing (ELE-X)

These are courses that cross disciplinary boundaries and/or cross boundaries through engagements outside the classroom or University allowing students to see how knowledge gained in one field might inform other fields or other aspects of society.

Math/Quantitative Reasoning (MA)

1 Math course, that has intermediate Algebra as prerequisite OR is a course listed on the General Education Distributive Learning List of Approved Courses. Any 3 hour college level math course, beyond Intermediate Algebra, meets this requirement.

* Majors in Fine Arts, Humanities or Social/Behavioral Sciences, may waive up to 6 credit hours of General Education requirements in the corresponding distribution area.

** Majors in Natural Sciences may waive up to 9 credit hours of General Education requirements in the Natural Sciences distribution area.

Students should also be aware of all other university requirements to obtain a degree - NEIU requirements (<http://catalog.neiu.edu/graduation-requirements/bachelors-degree/>)

Major in Physics for the Bachelors of Science Degree

Code	Title	Hours
Required Courses		
PHYS-206L	University Physics I With Lab	5
PHYS-207L	University Physics II With Lab	5
PHYS-305	Modern Physics I	3
PHYS-306A	Modern Physics II	3
PHYS-308	Introductory Mathematical Physics	3
PHYS-311	Mechanics I	3
PHYS-321	Electricity And Magnetism I	3
PHYS-335	Thermal Physics	3
PHYS-336	Quantum Mechanics	3
Electives (300-level, take at least three totaling 9 credit hours or more. At least one must be a WIP)		9
PHYS-307	Writing Intensive Program: Modern Physics Lab	
PHYS-309	Computing For Scientists	
PHYS-324	Advanced Classical Physics	
PHYS-330	Writing Intensive Program: Experimental Methods	
PHYS-331	Optics	
PHYS-332	Electronics	
PHYS-338	Quantum Mechanics II	
PHYS-340	The Science Of Sustainable Energy	
PHYS-344	Introduction To Solid State Physics	
PHYS-361	Materials I: Structural, Mechanical And Thermal Properties	
PHYS-362	Materials II: Electric And Optical Properties	
PHYS-369	Instrumentation Electronics	
PHYS-391	Astrophysics	
PHYS-392	Cosmology	
Total Hours		40
Code	Title	Hours
Required Mathematics Courses		
MATH-187	Calculus I	4
MATH-202	Calculus II	4
MATH-203	Calculus III	4
MATH-301	Ordinary Differential Equations I	4
Total Hours		16
Code	Title	Hours
Cognate Electives		
Select three of the following: ¹		9-13
CHEM-211	General Chemistry I	
CHEM-212	General Chemistry II	
CS-200	Programming Fundamentals	
CS-207	Object-Oriented Programming And Data Structures	
CS-334	Open Source Systems	
BIO-201	General Biology I	
BIO-202	General Biology II	
BIO-301	Cell Biology	
BIO-311	History of Science	
ENVI-301	Methods In Environmental Science	

ESCI-211	Physical Geology
ESCI-306	Writing Intensive Program: Earth Materials
ESCI-307	Climate Change: Evidence, Causes, Effects
ESCI-312	Historical Geology
ESCI-337	Principles Of Hydrogeology
MATH-253	Linear Algebra I
MATH-302	Ordinary Differential Equations II
MATH-303	Partial Differential Equations
MATH-304	Introduction To Numerical Analysis
MATH-305	Probability And Statistics
MATH-328	Complex Variables
MATH-340	Computing For Mathematicians

Total Hours**9-13**

¹ These electives must be chosen from at least two different departments.

This sample curricular map is provided to guide you in the planning of your progression for this major. This guide should not replace regular consultations with your program advisor. For specific recommendations of courses not identified, please consult your program advisor.

First Year

Term 1		Hours
MATH-187	Calculus I	4
PHYS-206L	University Physics I With Lab	5
General Education-Humanities		3
General Education-Fine Arts		3
Term Hours		15

Term 2		
MATH-202	Calculus II	4
PHYS-207L	University Physics II With Lab	5
CS-200	Programming Fundamentals	4
General Education-Social/Behavioral		3
Term Hours		16

Second Year

Term 1		
MATH-203	Calculus III	4
PHYS-305	Modern Physics I	3
MATH-253	Linear Algebra I	3
General Education-Fine Arts		3
Term Hours		13

Term 2		
PHYS-306A	Modern Physics II	3
PHYS-335	Thermal Physics	3
300-Level PHYS Elective		3
MATH-301	Ordinary Differential Equations I	4
General Education/Elective		3
Term Hours		16

Third Year

Term 1		
PHYS-311	Mechanics I	3
PHYS-321	Electricity And Magnetism I	3
General Education-Social/Behavioral		3
300-Level PHYS Elective		3
Elective		3
Term Hours		15

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Term 2			
PHYS-308	Introductory Mathematical Physics		3
PHYS-307	Writing Intensive Program: Modern Physics Lab		3
CHEM-211	General Chemistry I		5
General Education-Social/Behavioral			3
300-Level PHYS Elective			3
		Term Hours	17
Fourth Year			
Term 1			
PHYS-336	Quantum Mechanics		3
PHYS-330	Writing Intensive Program: Experimental Methods		3
300-Level PHYS Elective			3
General Education-Humanities			3
Elective			3
		Term Hours	15
Term 2			
300-Level PHYS Electives			3
PHYS-335 ^f not completed in year 2	Thermal Physics		3
General Education-Humanities			3
General Education-Social/Behavioral			3
Elective			3
		Term Hours	15
		Total Hours:	122