Physics and Philosophy, BS

The combined major in physics and philosophy provides a strong foundation in classical and modern physics, including studies of the various physical phenomena including electromagnetism, dynamics, building blocks of matter, energy, and radiation. It also provides students with an understanding of the methods and traditions of philosophical thought, as well as with opportunities to critically and collaboratively reflect on the nature of the world and the human situation in it. Students will be able to describe the method by which physical "law" is made manifest in the sciences, how this knowledge compares with other epistemological models studied in other contexts, and philosophical views on the status and source of physical "law."

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/).

Physics Major Requirements

Code	Title	Hours
Introductory Physics		
Physics 1		
Complete one of the following:		5
PHYS 1161 and PHYS 1162	Physics 1 and Lab for PHYS 1161	
PHYS 1151 and PHYS 1152 and PHYS 1153	Physics for Engineering 1 and Lab for PHYS 1151 and Interactive Learning Seminar for PHYS 1151	
Physics 2		
Complete one of the following:		5
PHYS 1165 and PHYS 1166	Physics 2 and Lab for PHYS 1165	
PHYS 1155 and PHYS 1156 and PHYS 1157	Physics for Engineering 2 and Lab for PHYS 1155 and Interactive Learning Seminar for PHYS 1155	
Intermediate Physics		
PHYS 2303	Modern Physics	4
PHYS 2371 and PHYS 2372	Electronics and Lab for PHYS 2371	4
Advanced Physics		
PHYS 3600	Advanced Physics Laboratory	4
PHYS 3602	Electricity and Magnetism 1	4
PHYS 4115	Quantum Mechanics	4
PHYS 4305	Thermodynamics and Statistical Mechanics	4
Physics Elective		
Complete one of the following:		4

MATH 4606	Mathematical and Computational Methods for Physics
PHYS 4621	Biological Physics 1
PHYS 4623	Medical Physics
PHYS 4651	Medical Physics Seminar 1
PHYS 4652	Medical Physics Seminar 2
PHYS 5113	Particle Physics
PHYS 5116	Network Science 1
PHYS 5260	Introduction to Nanoscience and Nanotechnology

Philosophy Major Requirements

Code	Title	Hours
Philosophy Required Courses		
PHIL 1115	Introduction to Logic	4
PHIL 2325	Ancient Philosophy and Political Thought	4
or POLS 2325	Ancient Philosophy and Political Thought	
PHIL 2330	Modern Philosophy	4
PHIL 4500	Theory of Knowledge	4
or PHIL 3050	Information and Uncertainty	
Advanced Philosophy Electives		
Complete two PHIL courses with a designation of 3000 or above not used to satisfy another requirement, with at least one at 4000 or 5000 level.		8
Critical Philosophy Elective		
Complete one of the following courses not used to fulfill another requirement:		4
AFCS 1101	Introduction to African American and Africana Studies	
PHIL 1104	Goddesses, Witches, Saints, and Sinners: Women and Religion	
PHIL 1271	Sex in Judaism, Christianity, and Islam	
PHIL 2155	Human Rights	
PHIL 2492	Indigenous Philosophy	
PHIL 2619	Race and Religion in Film	
PHIL 3500	Sexuality, Gender, and the Law	
PHIL 3822	Philosophy of Race and Racism	
Philosophy Electives		
Complete one additional PHIL course not used to satisfy other requirements.		4

Physics/Philosophy Integrative Requirements

Code	Title	Hours
Integrative Course Requirements		
PHIL 4510	Philosophy of Science	4
or PHIL 3360	Scientific Approaches to Philosophy	
PHYS 3601	Classical Dynamics	4

Breadth Courses

Code	Title	Hours
Mathematics		
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

Physics and Philosophy Major Credit Requirement

Complete 94 semester hours in the major.

Program Requirement

132 total semester hours required

Plan of Study
Notes on Physics Plans of Study

Some required physics courses are offered in both fall and spring semesters, while other required courses are offered less frequently. Therefore, the suggested plan of study will vary from student to student, depending on the year of entry for that student.

See course offering schedule at the end of the plans of study.

Please contact your academic advisor for additional information and plans of study.

Even-Numbered Year One
FIVE YEARS, THREE CO-OPS IN SUMMER 2/FALL

Year 1

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
ENGW 1111	4	MATH 1342	4	Vacation		Vacation	
MATH 1341	4	PHIL 2325	4				
PHIL 1115	4	PHYS 1165	4				
PHYS 1000	1	PHYS 1166	1				
PHYS 1161	4	PHYS 1167	0				
PHYS 1162	1	Elective	4				
PHYS 1163	0						
	18		**17**		**0**		**0**

Year 2

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
MATH 2321	4	EESC 2000	1	Vacation		Co-op	0
PHIL 2330	4	MATH 2341	4				
PHYS 2303	4	PHYS 3601	4				
PHYS 2371	3	PHIL critical elective	4				
PHYS 2372	1	PHIL elective	4				
	16		**17**		**0**		**0**

Year 3

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op	0	PHIL 4500	4	PHYS 3600	4	Co-op	0
		PHYS 4115	4	Elective	4		
		PHIL advanced elective	4				
		PHYS elective	4				
	0		**16**		**8**		**0**

Year 4

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op	0	ENGW 3307	4	Elective	4	Co-op	0
		PHIL 4510	4	Elective	4		
		PHYS 3602	4				
		PHIL elective	4				
	0		**16**		**8**		**0**

Year 5

Fall	Hours	Spring	Hours
Co-op	0	PHYS 4305	4
		PHIL advanced elective	4
		Elective	4
		Elective	4
	0		**16**

Total Hours: 132

FOUR YEARS, TWO CO-OPS IN SUMMER 2/FALL

Year 1

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
ENGW 1111	4	MATH 1342	4	MATH 2321	4	MATH 2341	4
MATH 1341	4	PHIL 2325	4	Elective	4	Elective	4
PHIL 1115	4	PHIL 2330	4				
PHYS 1000	1	PHYS 1165	4				
PHYS 1161	4	PHYS 1166	1				
PHYS 1162	1	PHYS 1167	0				
PHYS 1163	0						
	18		**17**		**8**		**8**

Year 2

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
PHYS 2303	4	EESC 2000	1	PHYS 3600	4	Co-op	0
PHYS 2371	3	PHYS 3601	4	Elective	4		
PHYS 2372	1	PHYS 3602	4				
Critical PHIL elective	4	PHIL advanced elective	4				
PHIL elective	4	Elective	4				
	16		**17**		**8**		**0**

Year 3

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op	0	PHIL 4500	4	ENGW 3307	4	Co-op	0
		PHIL 4510	4	Elective	4		
		PHYS 4115	4				
		PHYS elective	4				
	0		**16**		**8**		**0**

Year 4

Fall	Hours	Spring	Hours
Co-op	0	PHYS 4305	4
		PHIL advanced elective	4
		Elective	4
		Elective	4
	0		**16**

Total Hours: 132

PHYSICS COURSE OFFERING SCHEDULE

PHYS 2303 offered every fall, spring, and summer 2

PHYS 2371/PHYS 2372 offered every fall

PHYS 3600 offered every summer 1 and summer 2

PHYS 3601 offered every fall and spring

PHYS 3602 offered every fall and spring

PHYS 3603 offered fall, spring all years, and summer 1 (odd years)

PHYS 4115 offered every fall and spring

PHYS 4305 offered fall, spring all years, and summer 2 (even years)

PHYS 4621 offered fall (even years) and spring (odd years)

PHYS 4623 offered fall (even years) and summer 1 (even years)

PHYS 4651 offered fall (odd years) and spring (odd years)

PHYS 4652 offered every spring

PHYS 5318 offered every spring