Physics, MS

The Department of Physics offers a Master of Science degree with several options. The standard physics MS can be earned by taking a specified set of courses without an MS thesis. Alternatively, an MS thesis may substitute for 8 semester hours of coursework. Both of these options may be pursued either full time or part time. Upon completion of the MS degree in physics, students should be able to apply graduate-level knowledge and solve problems in the areas of electrodynamics, quantum mechanics, classical mechanics, statistical mechanics, and advanced mathematical methods.

Grade Requirements

To qualify for the MS degree, a cumulative average of 3.000, equivalent to a grade of B, must be obtained. No more than two courses or 6 semester hours of credit, whichever is greater, may be repeated in order to satisfy the requirements for the MS degree. A student who does not maintain a 3.000 cumulative average for two consecutive semesters, or is otherwise not making satisfactory progress toward the MS degree requirements, may be recommended for termination at the discretion of the graduate committee.

Within the above limitations, a required course for which a grade of F is received must be repeated with a grade of C or better and may be repeated only once. Elective courses in which an F has been received may be repeated once to obtain a C or better.

Transfer Credit

Students must petition, in writing, through the graduate committee to the director of graduate student services for all transfer credit. An official transcript must be attached to the Request for Transfer Credit form. A maximum of 9 semester hours of credit obtained at another institution may be accepted toward the MS degree provided that the credits transferred consist of a grade of B or better in graduate-level courses and have not been used toward any other degree. Grades are not transferred.

Current MS Students Interested in the PhD Program

Physics MS students interested in applying to the Physics, PhD (https://catalog.northeastern.edu/graduate/science/physics/physics-phd/) program must submit a complete application for admission.

Special Student Status

Special students are allowed to earn credit for a maximum of 12 semester hours. Students interested in taking more than 12 semester hours must make a formal application to the degree program online.

Coursework

The MS degree requires successful completion of a minimum of 32 semester hours of coursework. There are three options for the MS degree:

The first option is the standard physics MS without an MS thesis, requiring a minimum of 32 semester hours of coursework.

The second option is the standard physics MS with an MS thesis, requiring a minimum of 1 semester hour of thesis. Up to 8 semester hours of thesis can substitute for coursework.

The third option is the physics MS with thesis and specialization in applied physics, engineering physics, biophysics, chemical physics, material physics, mathematical physics, and computational physics.

Graduate students desiring the MS with thesis option should arrange a thesis with a faculty advisor. The thesis must demonstrate the individual's capacity to execute independent work based on original material. The thesis must be approved by the graduate committee. The thesis may be completed in one semester (e.g., summer semester) or in consecutive semesters. Students who have not completed their thesis after the required number of thesis credits must register for Thesis Continuation until the thesis is approved by the graduate school and submitted electronically to Proquest.

The degree requires a minimum of 32 semester hours of graduate credit. The 32 semester hours may include up to 9 semester hours of transfer credit, as approved by the department's graduate committee and the graduate school.

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 and requirements listed below unless otherwise indicated.

Core Requirements

Code	Title	Hours
Computational Coursework		
PHYS 7301	Classical Mechanics/Math Methods	4
PHYS 7305	Statistical Physics	4
PHYS 7321	Computational Physics	4
Theory Coursework		
PHYS 7302	Electromagnetic Theory	4
PHYS 7315	Quantum Theory 1	4
PHYS 7316	Quantum Theory 2	4

Options

- Coursework (p. 2)
- Thesis (p. 2)
- Thesis with specialization (p. 2)[1]

COURSEWORK OPTION

Note: In consultation with your faculty advisor, you may choose an area of specialization from physics, engineering, chemistry, biology, mathematics, psychology, or computer science. Elective courses from the Physics, PhD (https://catalog.northeastern.edu/graduate/science/physics/physics-phd/) program may substitute for these electives with advisor approval.

Code	Title	Hours
Electives		
Complete 8 semester hours from the following:		8
PHYS 5113	Particle Physics	
PHYS 5116	Network Science 1	
PHYS 5117	Advanced Astrophysics Topics	
PHYS 5118	General Relativity and Cosmology	
PHYS 5125	Advanced Quantum Mechanics	
PHYS 5260	Introduction to Nanoscience and Nanotechnology	
PHYS 5318	Principles of Experimental Physics	
PHYS 7322	Nonequilibrium Physics	
PHYS 7323	Elementary Particle Physics	
PHYS 7324	Condensed Matter Physics	
PHYS 7325	Quantum Field Theory 1	
PHYS 7731	Biological Physics 1	

THESIS

Code	Title	Hours
Complete 8 semester hours from the following:		8
PHYS 7990	Thesis (In consultation with your faculty advisor, any remaining semester hours may be completed with electives.)	

In consultation with your faculty advisor, any remaining semester hours may be completed with electives.

THESIS WITH SPECIALIZATION[1]

Applied physics, engineering physics, biophysics, chemical physics, materials physics, mathematical physics, or computational physics.

Code	Title	Hours
Complete a minimum of 12 semester hours from the following:		12
PHYS 7990	Thesis (A minimum of 1 semester hour is required and up to 8 semester hours may be used toward the thesis option.)	

Complete a minimum of 8 semester hours of specialization coursework in consultation with your faculty advisor.

Program Credit/GPA Requirements

32 total semester hours required
Minimum 3.000 GPA required

[1] Note that the specialization will not appear on the degree diploma or on the official transcript but can be listed as the field of study on CVs and grant proposals.

Plan of Study

Year 1			
Fall	**Hours**	**Spring**	**Hours**
PHYS 7301	4	PHYS 7305	4
PHYS 7302	4	PHYS 7316	4
PHYS 7315	4	Elective (optional)	4
PHYS 7321 (can be taken year 1 or year 2)	4		
	16		**12**

Year 2	
Fall	**Hours**
Elective or thesis	4
Additonal elective	4
	8

Total Hours: 36