

PHYSICS

Degree Requirements

Master of Education (M.Ed.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-700 Professional Degree Policies (<https://gradschool.psu.edu/graduate-education-policies/>).

A minimum of 30 credits at the 400, 500, or 800 level is required, with a minimum of 18 credits at the 500 or 800 level, and at least 6 credits at the 500 level.

At least 18 credits in physics are required. Six additional nonresearch science credits (which may be in physics) and a 6-credit minor in a field of professional education also must be included. A term paper must be submitted and accepted by the department.

Master of Science (M.S.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Policies. (<https://gradschool.psu.edu/graduate-education-policies/>)

A minimum of 30 credits at the 400, 500, 600, or 800 level is required. For the thesis option, at least 18 credits must be at the 500 and 600 level, combined. For the non-thesis option, at least 18 credits must be at the 500-level. 600 and 610 credits are for the thesis option only. Required courses include PHYS 559 (2 credits) and PHYS 590.

Code	Title	Credits
Required Courses		
PHYS 559	Graduate Laboratory	2
PHYS 590	Colloquium	1

There are two options.

- Thesis option: A research-based thesis must be written. The thesis must be based on at least 6 credits of PHYS 600 or PHYS 610 and must conform to Graduate School regulations. The thesis must be accepted by the advisers and/or committee members, the head of the graduate program, and the Graduate School.
- Nonthesis option: PHYS 530, PHYS 557, and either PHYS 561 or 410 are required. Students must complete at least 18 credits at the 500 level. This is an additional 6 to 10 credits beyond the required courses depending on whether the students take PHYS 561 or PHYS 410. A short paper must be submitted to, and accepted by, the department.

There is no degree examination for either option.

Doctor of Philosophy (Ph.D.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Policies. (<https://gradschool.psu.edu/graduate-education-policies/>)

Code	Title	Credits
Required Courses		
PHYS 517	Statistical Mechanics	3
PHYS 530	Theoretical Mechanics	3
PHYS 557	Electrodynamics	3
PHYS 559	Graduate Laboratory	2
PHYS 561	Quantum Mechanics I	3

First-Year Seminar Series

Total Credits **14**

Courses required beyond these depend on the Ph.D. research subfield. Students take at least four additional 3-credit, 500-level physics courses.

A qualifying examination is given at the end of the first year, a comprehensive examination approximately two years after the qualifying examination, and a final oral examination (the dissertation defense) takes place after the completion of the dissertation. The dissertation must be accepted by the Ph.D. committee, the head of the graduate program, and the Graduate School. There is no departmental foreign language requirement, although a reading knowledge of one foreign language may be needed in some areas of research.