PHYSICS

Graduate Programs

Prerequisites

Thirty semester hours of physics beyond the elementary course work and mathematics courses through advanced calculus and differential equations are normally required.

The Master of Science Degree

Students can choose between a thesis or non-thesis plan. For both plans, the required courses are the following:

Code	Title	Hours
PHYS 5113	Statistical Thermodynamics and Kinetic Theory	3
PHYS 5313	Electromagnetic Theory	3
PHYS 5413	Classical Mechanics	3
PHYS 5453	Mathematical Methods for Physicists	3
PHYS 5613	Quantum Mechanics I	3

The thesis plan requires the successful completion of 30 semester credit hours beyond the BS, which include the required courses; nine semester credit hours of electives in physics, mathematics or an allied field; and the submission of an acceptable thesis along with six credit hours of PHYS 5000 Master's Thesis Research or Report. The thesis is to be based on original and independent research, on a topic chosen in consultation with the student's advisor. The student must successfully defend the thesis in an oral examination. The non-thesis plan requires 32 semester credit hours beyond the BS degree, including the required courses; fifteen hours of electives (with up to nine credit hours of senior level courses); and two credit hours of library research (PHYS 5000 Master's Thesis Research or Report) on a topic chosen in consultation with the student's advisor. A completed written report based on the library research must be orally presented to the student's advisory committee. For both plans, the electives must be chosen in consultation with the student's advisory committee.

Also available at the MS level is an option in optics and photonics, in association with the School of Electrical and Computer Engineering. Students may pursue one of two plans, both of which require 24 credit hours of coursework with at least one course taken outside the student's specialization. Beyond this, the first plan (30 credit hours) requires an additional six hours of research and a successful defense of a thesis. The second plan (32 credit hours) requires an additional six hours of coursework and a two-credit-hour report.

The Doctor of Philosophy Degree

The following physics courses are required:

Code	Title	Hours
PHYS 5113	Statistical Thermodynamics and Kinetic Theory	3
PHYS 5213	Statistical Mechanics	3
PHYS 5313	Electromagnetic Theory	3
PHYS 5413	Classical Mechanics	3
PHYS 5453	Mathematical Methods for Physicists	3
PHYS 5613	Quantum Mechanics I	3
PHYS 6313	Quantum Mechanics II	3

Three additional PHYS prefix courses at the 5000- or 6000-level, including at least one course not in the student's specialization, must be completed. Additional courses reflecting the candidate's specialization may be required by the advisory committee. Seventy-two (72) semester hours of credit beyond the bachelor's degree, or sixty semester hours of credit beyond the master's degree are required. A minimum of two-thirds of the graduate course credits must be in physics. No more than six credit hours of eligible physics coursework at the 4000-level can be counted toward graduate credit and no more than 12 total credit hours of eligible coursework in all subjects at the 3000- or 4000-level can be counted toward graduate credit. Courses taken at another institution will be evaluated by a faculty committee to determine whether they satisfy any requirements.

A Photonics PhD program shared with the Electrical and Computer Engineering Department is also available, with Physics as the home department. Details of the multidisciplinary photonics PhD program are found in the “Graduate College (http://catalog.okstate.edu/graduate-college/)” section of the Catalog.

The most important single requirement for the PhD in physics is the presentation of an acceptable dissertation which represents original research work by the student and which demonstrates the student's ability to do independent study as well as to plan and carry out future research in his or her field. Full information on graduate programs in the Department of Physics is available from the Graduate Coordinator or from the department website at physics.okstate.edu (https://physics.okstate.edu/).