

PHYSICS (PH.D.)

<https://ceps.unh.edu/physics/program/phd/physics>

Description

The Physics Ph.D. program prepares students for a career in industry, education, research or academia. Students will progress from studying a core curriculum encompassing fundamental areas of physics to taking elective classes in their area of interest. They will then conduct original research in a particular research area, leading to their PhD dissertation and defense.

For more details, please consult the physics [graduate student handbook](#).

Applying

Please visit the [Graduate School website](#) for detailed instructions about applying to the program.

Cognate in College Teaching

The Cognate in College Teaching is essentially a minor in college level teaching; this minor is given in association with a PhD degree only (not with a Master's); it is not a stand-alone degree. The purpose of the Cognate is to prepare future faculty for their role as teachers. For more information please see the [College Teaching](#) program page in this catalog.

Requirements

Ph.D. Degree Requirements

Code	Title	Credits
PHYS 805	Experimental Physics (or equivalent demonstrated experimental proficiency)	4
PHYS 931	Mathematical Physics	3
PHYS 935	Statistical Physics	3
PHYS 939	Classical Mechanics	3
PHYS 941 & PHYS 942	Electromagnetic Theory I and Electromagnetic Theory II	6
PHYS 943 & PHYS 944	Quantum Mechanics I and Quantum Mechanics II	6
PHYS 806	Introduction to Physics Research and Teaching (two semesters, taken during the first year in the program)	1
Select four additional 3+ credit elective courses, of which 2 may be at the 800 level ¹		12
Total Credits		38

¹ For Space Science students, these courses must include Plasma Physics (PHYS 951), Magnetohydrodynamics of the Heliosphere (PHYS 953), and one of Magnetospheres (PHYS 987), Heliospheric Physics (PHYS 954).

Students are required to

- demonstrate proficiency in teaching,
- pass the written comprehensive exam, and
- pass an oral qualifying exam on a thesis proposal.

Degree candidates are required to

- register for a minimum of two semesters of PHYS 999 Doctoral Research,

- pass the oral dissertation defense, and
- successfully submit the final dissertation to the Graduate School.

Student Learning Outcomes

- Students will master the theoretical concepts in advanced mechanics, electromagnetism, quantum mechanics and statistical mechanics at the graduate level.
- Students will have an advanced understanding of the mathematical methods, both analytical and computational, required to solve complex physics problems at the graduate level.
- Students will be proficient in experimental physics.
- Students will develop and demonstrate proficiency in teaching at the undergraduate level.
- Students will have a specialized knowledge of their chosen field of advanced research in physics.
- Students will be able to present advanced scientific ideas effectively in both written and oral form.
- Students will be well prepared for postgraduate study in physics and related disciplines, as well as advanced careers in a multitude of fields ranging from scientific and technical to financial.