Physics, Ph.D.

Degree Requirements

- **Course Requirements**: Students must complete a minimum of 38 credit hours in physics or astronomy at the 600 or 700 level (or approved courses from other departments relevant to the program of study).
- **Calculation of the GPA**: Students must earn a minimum cumulative GPA of 2.75 and a minimum GPA of 3.0 in courses applied to the degree.
- **Research Requirement**: Research is the central focus of the degree and is directed by a faculty adviser over a period of several years. When the research is completed, the student must write a dissertation and defend it before the doctoral committee. The average completion time for the Ph.D. is five years beyond the B.S. Research specialties within the department include astrophysics/astronomy, biophysics, condensed matter physics, physics education research, and plasma physics.

Curriculum Requirements

Code	Title	Hours
CORE COURSES:		**20**
PHYS 611	Introduction to Mathematical Physics	
PHYS 631	Advanced Classical Mechanics 1	
PHYS 633	Electromagnetism 1	
PHYS 651	Quantum Mechanics 1	
PHYS 761	Statistical Mechanics	
PHYS 796	Graduate Seminar	
PHYS 634	Electromagnetism 2	
or PHYS 652	Quantum Mechanics 2	
PHYS or ASTR MAJOR ELECTIVES: *		**6**
Select two courses in PHYS or ASTR at the 600 level or above.		
ADDITIONAL ELECTIVES: **		**9**
Any ASTR or PHYS courses at the 600 or 700 level *		
EDUC 652	Statistical Methods 1	
EDUC 653	Statistical Methods 2	
EDUC 658	Survey Research Methods	
EE 528	Biomedial Microdevices	
EE 564	Digital Signal Processing for Radio Astronomy	
EE 650	Optoelectronics	
RESEARCH ***		**3**
PHYS 797	Research	
Total Hours		38

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Except ASTR 796 Graduate Seminar, ASTR 797 Research, PHYS 796 Graduate Seminar, and PHYS 797 Research.

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Students wishing to take courses from other departments should work with the Graduate Studies Committee for approval prior to building their plan of study.

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Students are expected to be involved in research throughout their graduate career, and enrollment in ASTR or PHYS 797, should reflect this activity. Students must complete at least three hours, however most students complete more than 80 hours. These requirements can be fulfilled through alternate means through discussion with an advisor.

Major Learning Outcomes

PHYSICS

The central missions of the Graduate Program in Physics are to train the next generation of Physicists and Astronomers for productive careers in the global economy, to provide the ability to students that will allow them to master the fundamental knowledge of physics, to provide the experience to conduct independent research, and to expand the scientific boundaries of physics and astronomy.

Students earning a Ph.D. in Physics will be able to:

- Explain physics and astronomy principles as they pertain to their specific field of research.
- Demonstrate the ability to understand and critically evaluate the existing literature published within their field.
- Understand the ethical impact of personal and professional behavior.
- Independently design and execute new experimental, theoretical, or computational studies that can address important scientific questions in physics and astronomy.
- Effectively communicate their research in oral and written formats, including the ability to author manuscripts suitable for publication in peer reviewed scientific journals.