

MASTER OF SCIENCE, MAJOR IN PHYSICS

Program Goals

In addition to the general learning goals of the Graduate School, at the completion of the physics graduate program, the student will:

1. Demonstrate advanced knowledge in graduate level physics and in their field of thesis research.
2. Demonstrate independent critical and analytical thinking, both within their field of study and beyond, for use in the service to others.
3. Identify and suggest possible solutions to ethical dilemmas that occur in their work and field of study, and understand the importance of professional ethics in all aspects of scientific communication and laboratory work.
4. Demonstrate competence in their laboratory or computational work, including application of the scientific method and appropriate use of basic and state of the art tools and techniques.
5. Demonstrate written and oral skills necessary for communication of research, knowledge, and ideas to scientists and non-scientists.

Admission Requirements

In general, properly prepared students will have undergraduate preparation in physics comparable to the present minimum Physics degree requirements at Creighton University. This must include upper-division course work covering each of the following categories: mechanics, electromagnetism, and modern physics. Additional work in physics to bring the total to 24 semester hours, plus support from mathematics, is needed. An undergraduate grade point average of 3.00 or better is preferred.

The Graduate School requires all students from countries in which English is not the native language to demonstrate competence in English in the TOEFL (Test of English as a Foreign Language) examination with a score of 90 on the Internet-based Test (iBT) at the graduate level. Higher TOEFL scores are required to be competitive for teaching or research fellowships.

M.S., Major in Physics course requirements (30-33 credits):

Flexibility is achieved within the Graduate School through two types of master's programs — Plan A (with thesis) and Plan B (without thesis) — and within the Physics Department through the further tailoring of these programs to the needs of the individual student. Physics graduate students individually arrange their graduate programs in consultation with their advisor.

PHY 641	Statistical Mechanics	3
Thesis (Plan A) or Non Thesis (Plan B) Option ³		18-21
Plan A: 12 credits of Elective and 6 credits of PHY 799		
Electives (12 credits) ²		
PHY 799 (6 credits)		
Plan B: 21 credits of Electives		
Electives (21 credits) ²		
Comprehensive Exam - must pass all sections of the three-part exam		
Total Credits		30-33

¹ These "core courses" are designed to provide an advanced understanding of concepts, principles, and methods in the fundamental areas of Physics.

² Course electives may be selected with the consent of the advisor. These courses normally come from the areas of atmospheric sciences, mathematics/computer science, chemistry, or biology.

³ Students choosing Plan A complete a minimum of 30 credits. Students choosing Plan B complete at least 33 credits.

Code	Title	Credits
Required Core Courses of All Students ¹		
PHY 611	Classical Mechanics	3
PHY 621	Electromagnetic Theory	3
PHY 631	Quantum Mechanics I	3