PHYSICS: ENGINEERING PHYSICS OPTION (M.S.)

https://www.unh.edu/program/master-science/physics-engineering-physics

Description

The goal of the Engineering Physics M.S. program option is to produce broadly trained engineers with a deep understanding of the foundations of their chosen engineering specialty. Students in the program select a mix of graduate courses in physics and engineering that is tailored to support their individual interests and career goals. The M.S. program also includes a capstone experience, which can be either a Master's Thesis or a Master's Project.

Requirements

To obtain the degree, students must complete a minimum of **30 credits** as outlined below.

Code	Title	Credits
Required Courses		
PHYS 805	Experimental Physics [1]	4
PHYS 806	Introduction to Physics Research and Teaching [2]	2
900-Level Courses		
Select four (4) courses from the below list:		12
Students must select a minimum of one course offered by the Physics department and one course outside the Physics department. The following courses will count toward this requirement. Other courses can be selected with approval of the Engineering Physics program committee.		
PHYS 935	Statistical Physics	
PHYS 939	Classical Mechanics	
PHYS 941	Electromagnetic Theory I	
PHYS 942	Electromagnetic Theory II	
PHYS 943	Quantum Mechanics I	
PHYS 944	Quantum Mechanics II	
PHYS 951	Plasma Physics	
PHYS 953	Magnetohydrodyamics of the Heliosphere	
PHYS 954	Heliospheric Physics	
PHYS 961	Advanced Quantum Mechanics I	
PHYS 965	Advanced Solid-State Physics	
PHYS 987	Magnetospheres	
PHYS 988	High Energy Astrophysics	
CS 950	Advanced Machine Learning	
ECE 915	Advanced Active Circuits	
ECE 920	Wireless Communication Systems	
ECE 925	Biosensors: Fundamentals and Applications	
ECE 941	Digital Signal Processing	
ECE 952	Advanced Control Systems II	
ECE 960	Computer Architecture	
IAM 932	Graduate Partial Differential Equations	
IAM 933	Applied Functional Analysis	
IAM 961	Numerical Analysis I: Numerical Linear Algebra	
IAM 962	Numerical Partial Differential Equations	
ME 922	Continuum Mechanics	
ME 909	Viscous Flow	
ME 910	Turbulence	
ME 927	Theory of Plasticity	
ME 951	Advanced Control Systems I	
ME 986	Advanced Finite Element Analysis	
Capstone		
Select one of the following options:		12
Option A: Thesis - 12 additional credits including a 6 credit Master's Thesis PHYS 899 with oral defense		
Option B: Project - 12 additional credits including a Master's Project PHYS 895 (up to 4 credits) with a seminar presentation		
Total Credits		**30**

1 Or equivalent demonstrated experimental proficiency.
2 Two semesters, or equivalent professional development courses or seminars.

Accelerated Master's

Accelerated Master's Overview

Accelerated Master's programs offer qualified University of New Hampshire undergraduate students the opportunity to begin graduate coursework in select graduate programs while completing a bachelor's degree. Accelerated master's programs are designed to provide students with an efficient and cost-effective pathway to earn both a bachelor's and master's degree or graduate certificate, enhancing career opportunities and long-term earning potential.

Accelerated Master's Highlights

- Begin studying advanced topics while an undergraduate student with the opportunity to complete a master's degree or graduate certificate early.
- Master's degree program students: Earn up to 12* graduate (800-level) course credits while completing a bachelor's degree. This coursework will count as dual-credit toward both the bachelor's and master's degrees.
- Graduate certificate program students: Earn up to 8* graduate (800-level) course credits while completing a bachelor's degree. This coursework will count as dual-credit toward both the bachelor's degree and the graduate certificate.
- Students complete the bachelor's degree, and then officially matriculate into the master's or graduate certificate program to complete the remaining required graduate-level coursework.

**Some exceptions apply.*

Accelerated Master's Admission Requirements

- A minimum 3.2 cumulative GPA is required.*
- A minimum of 90 undergraduate credits must be completed prior to enrolling in graduate (800-level) courses.
- Streamlined Graduate School Application (two letters of recommendation; most standardized tests and application fee are waived).*

**Some exceptions apply.*

Accelerated Master's Requirements

- Students must attend a mandatory orientation session.
- Students must submit a special registration form each semester for dual-credit courses and note any DegreeWorks exceptions.
- Students may defer graduate matriculation for up to one year after earning their bachelor's degree in most programs.
- See the Accelerated Master's Catalog Policy and Accelerated Master's Website for additional information and a list of programs. Note that some programs have additional requirements (e.g. higher-grade expectations) compared to the general policy.

Physics: Engineering Physics (M.S.) Accelerated Option

This graduate degree program is approved to be taken on an accelerated basis in articulation with the following undergraduate program(s):

Code	Title	Credits
Engineering Physics (B.S.)		
Physics (B.S.)		
Students select any 800-level courses in physics, math, other science disciplines, and engineering that can be completed in the undergraduate senior year for dual credit.		

Student Learning Outcomes

Program Learning Outcomes

- Students will master the fundamental concepts in their chosen field of study and have a specialized knowledge of their chosen field of research at the level of a Masters degree.
- Students will have an advanced understanding of the mathematical methods, both analytical and computational, required to solve complex physics and engineering problems at the graduate level.
- Students will demonstrate mastery of experimental physics by designing and executing controlled investigations that apply engineering science principles to solve real-world technical challenges.
- Students will be well prepared for further graduate study in physics, engineering, and related disciplines.
- Students will be well prepared for advanced careers in a multitude of fields ranging from scientific and technical to financial.
- Students will be able to present advanced scientific ideas effectively in both written and oral form.