

PHYSICS B.A. - ENGINEERING PHYSICS

The Engineering Physics concentration provides a thorough study of physics and a solid background in engineering and mathematics. Graduates from this program can go on to graduate programs in physics and engineering or seek career opportunities in technical fields.

Bachelor of Arts - Physics; Engineering Physics Concentration

General Education Requirements

Information regarding these requirements can be found in the General Education Section (<http://catalog.umn.edu/academics/general-education-requirements/>) of the catalog.

Summary

Code	Title	Hours
	Lower-Division Physics	10
	Upper-Division Physics	18
	Engineering Core	13
	Physics and Engineering Electives	9
	Mathematics Requirements	15
	Computer Science Requirements	3
	Advanced College Writing Requirement	3
Total Hours		71

Degree Specific Credits: 71

Required Cumulative GPA: 2.0

Lower-Division Physics Core

Code	Title	Hours
Complete all of the following courses:		10
PHSX 215N & PHSX 216N	Fundamentals of Physics with Calculus I and Physics Laboratory I with Calculus	
PHSX 217N & PHSX 218N	Fundamentals of Physics with Calculus II and Physics Laboratory II with Calculus	
Total Hours		10

Minimum Required Grade: C-

Upper-Division Physics Core

Code	Title	Hours
Complete all of the following courses:		
PHSX 301	Intro Theoretical Physics	3
PHSX 311	Oscillations and Waves	2
PHSX 323	Intermediate Physics Lab	3
PHSX 343	Modern Physics	3
PHSX 423	Electricity & Magnetism I	3
PHSX 446	Thermodynamics & Statistical Mechanics	3

PHSX 499	Senior Capstone Seminar	1
Total Hours		18

Minimum Required Grade: C-

Engineering Core

Code	Title	Hours
Complete all of the following courses:		
EGEN 101	Intro to Engineering Calculation & Problem Solving	3
EGEN 201	Engineering Statics	3
EGEN 202	Engineering Mechanics - Dynamics	3
EELE 201	Circuits I for Engineering	4
Total Hours		13

Minimum Required Grade: C-

Physics and Engineering Electives

Rule: Choose 9 additional upper division credits in physics or engineering

Note: Other PHSX courses may be substituted with adviser approval.

Code	Title	Hours
Complete 9 credits of the following courses:		9
EGEN 335	Fluid Mechanics	
PHSX 320	Classical Mechanics	
PHSX 327	Optics	
PHSX 330	Communicating Physics	
PHSX 333	Computational Physics	
PHSX 425	Electricity & Magnetism II	
PHSX 444	Advanced Physics Lab	
PHSX 461	Quantum Mechanics I	
PHSX 462	Quantum Mechanics II	
Total Hours		9

Minimum Required Grade: C-

Math Requirements

Note: M 412 and M 418 are recommended as well

Code	Title	Hours
Complete all of the following courses:		
M 171	Calculus I	4
M 172	Calculus II	4
M 273	Multivariable Calculus	4
M 274	Introduction to Differential Equations	3
Total Hours		15

Minimum Required Grade: C-

Computer Science Requirements

Code	Title	Hours
Complete one of the following courses:		3
CSCI 151	Interdisciplinary Computer Science I	
PHSX 333	Computational Physics (strongly recommended)	
Total Hours		3

Minimum Required Grade: C-

Advanced College Writing Requirement

Note: May substitute another advanced writing course as approved by the department chair.

Code	Title	Hours
Complete the following course:		
PHSX 330	Communicating Physics	3
Total Hours		3

Minimum Required Grade: C-