

# PHYSICS MAJOR WITH MATERIAL SCIENCE FOCUS

## Requirements

### Degree Requirements

This major is available as a bachelor of arts or bachelor of science degree, as defined in the section on degree requirements (<http://catalog.linfield.edu/degrees-and-programs/undergraduate/ba-bs-bsn/>) for all majors in this catalog.

### Major Requirements

48 credits from within the department, plus an additional 33 required credits from outside the department, for a combined total of 81 credits:

Code	Title	Credits
<b>Physics Major Core Courses</b>		
PHYS 210	INTRODUCTION TO MECHANICS	5
PHYS 211	INTRODUCTION TO ELECTROMAGNETISM	5
PHYS 215	MODERN PHYSICS	4
PHYS 220	THERMAL & STATISTICAL PHYSICS	3
PHYS 385	GREAT EXPERIMENTS IN PHYSICS	1
PHYS 386	EXPLORATION IN EXPERIMENTAL PHYSICS	1
PHYS 420	CLASSICAL MECHANICS	4
PHYS 440	ELECTRICITY AND MAGNETISM I	3
PHYS 441	ELECTRICITY & MAGNETISM II	3
PHYS 475	QUANTUM PHYSICS	4
PHYS 489	THESIS RESEARCH	1
or ENGR 489	ENGINEERING DESIGN PROJECT	
PHYS 490	SENIOR THESIS	3
<b>Material Science Focus Courses</b>		
PHYS 303	INTRODUCTION TO MATERIALS SCIENCE (ALSO LISTED AS ENGR 303)	3
PHYS 315	CIRCUITS AND ELECTRONICS I (ALSO LISTED AS ENGR 315)	4
PHYS 316	CIRCUITS AND ELECTRONICS II (ALSO LISTED AS ENGR 316)	4
Material Science Focus also requires:		
MATH 170	CALCULUS I	5
MATH 175	CALCULUS II	3
MATH 200	VECTOR CALCULUS	5
MATH 210	ORDINARY DIFFERENTIAL EQUATIONS	4
MATH 250	LINEAR ALGEBRA	4
CHEM 210	GENERAL CHEMISTRY	4
CHEM 211	GENERAL CHEMISTRY	4
CHEM 350	INORGANIC CHEMISTRY I	4
<b>Total Credits</b>		<b>81</b>

Courses must be completed with a grade of C- or better to count toward the major.

## Student Learning Outcomes

- demonstrate knowledge of the foundational principles and methods in physics,

- understand that physics is a process, not just a body of knowledge, and implement the process of scientific inquiry
- communicate scientific knowledge effectively both orally and in writing, and
- leave Linfield with an appreciation for the power and elegance of physics and the ability to achieve science-related goals.

## Oregon Preliminary Teaching Licensure in Physics

Students who are also seeking an Oregon Preliminary Teaching License must also complete a Secondary Education major with Licensure. In order to complete the Secondary Education major with Licensure, students should begin taking education courses no later than their sophomore year. The student must be advised by faculty in both majors.