Nebraska Wesleyan University

PHYS 3100 Electromagnetism and Optics

Catalog

2025-2026

Course Description

This course builds upon the foundation of electromagnetism and optics developed in introductory physics, and the quantum nature of photons introduced in modern physics. Topics include electrostatic forces, fields, and potentials; magnetic forces on charges and currents; magnetic fields produced by steady currents; light as an oscillating electromagnetic field; polarization of light; ray tracing of optical systems; optical interference; and electric, magnetic, and optical properties of matter. Vector calculus will be developed and heavily used.
Three lectures per week.
One recitation per week.
Prerequisite(s): PHYS 1700 Principles of Physics II or PHYS 2100 General Physics II, MATH 1610 Calculus II, and computer programming skills or permission of the instructor.
Corequisite(s): MATH 2600 Calculus III or MATH 3100 Differential Equations.
(Normally offered alternate fall semesters.)

Course Hours

4 hours

Departments

1. Physics