

PHYS-1240 ALGEBRA-BASED PHYSICS II 3 CREDITS

SYLLABUS

CATALOG DESCRIPTION

The second half of a two-semester algebra-based introduction to Physics. This course covers electricity, magnetism and optics.

Prerequisites: PHYS 1230 Algebra-based Physics I

Semester Offered: Fall, Spring

COMMON STUDENT LEARNING OUTCOMES

Upon successful completion of San Juan College programs and degrees, the student will demonstrate competency in...

BROAD AND SPECIALIZED LEARNING

Students will actively and independently acquire, apply, and adapt skills and knowledge with an awareness of global contexts.

CRITICAL THINKING

Students will think analytically and creatively to explore ideas, make connections, draw conclusions and solve problems.

CULTURAL AND CIVIC ENGAGEMENT

Students will act purposefully, reflectively, and ethically in diverse and complex environments.

EFFECTIVE COMMUNICATION

Students will exchange ideas and information with clarity in multiple contexts.

INFORMATION LITERACY

Students will be able to recognize when information is needed and have the ability to locate, evaluate, and use it effectively.

INTEGRATING TECHNOLOGIES

Students will demonstrate fluency in the application and use of technologies in multiple contexts.

Student work from this class may be randomly selected and used anonymously for assessment of course, program, and/or institutional learning outcomes. For more information, please refer to the Dean of the appropriate School.

COURSE LEARNING OUTCOMES

Upon successful completion of the course, the student will be able to...

1. Be able to state Coulomb's Law and Gauss's laws and apply them.
2. Apply the concepts of electric charge, electric field and electric potential to solve problems.
3. Analyze simple DC and AC circuits.

4. Apply the Lorentz force to solve problems.
5. Apply Faraday's law of induction (and Lenz's law) to solve problems.
6. Apply ray optics to practical lens systems such as microscopes and corrective lenses.
7. Apply the wave nature of light to the phenomena of reflection, refraction, and diffraction.

Optional Topics (some schools include these in Physics I, others in Physics II):

1. sound
2. waves
3. heat
4. thermodynamics
5. oscillatory motion
6. modern physics

Optional Student Learning Outcomes:

1. Describe the fundamental properties of periodic motion.
2. Explain and apply the basic concepts of sound and wave motion.
3. Explain the basic concepts of heat and thermodynamics.
4. Explain the basic concepts of quantum theory and special relativity.