

PALOMAR COLLEGE
COURSE OUTLINE OF RECORD FOR
DEGREE CREDIT COURSE

X Transfer course X A.A. degree applicable course
(check all that apply)

COURSE NUMBER AND TITLE: PHYS 201 - Fundamentals of Physics

UNIT VALUE: 5

MINIMUM NUMBER OF SEMESTER HOURS: 112

BASIC SKILLS REQUIREMENTS: Appropriate language and computational skills.

ENTRANCE REQUIREMENTS:

PREREQUISITE: PHYS 200

COREQUISISTE: None

RECOMMENDED PREPARATION: Completion of, or concurrent enrollment in, MATH 141

SCOPE OF COURSE: A calculus-based course in classical electromagnetism, optics and atomic physics, with an emphasis on life science and architectural fields. This course fulfills the transfer requirement for students in the life sciences, pre-professional, and architectural fields. (PHYS 230 series recommended for majors in engineering, computer science, or physics.)

SPECIFIC COURSE OBJECTIVES:

The successful student will be able to:

1. Demonstrate a comprehensive understanding of introductory classical electromagnetism, which is intended for lower division students who are majoring in the life sciences.
2. Apply physics concepts and principles of classical electromagnetism, optics and atomic physics at the undergraduate college level.
3. Analytically solve quantitative physics problems.
4. Apply laws of classical electromagnetism, optics and atomics physics to laboratory situations, perform experiments, collect and analyze data, and prepare and present reports.

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:

LECTURE:

- I. Electromagnetism
 - A. Charge and Coulomb's Law
 - B. Electric field
 - C. Gauss's Law
 - D. Electric potential
 - E. Capacitors and dielectrics
 - F. Current and resistance
 - G. DC circuits
 - H. Magnetic field
 - I. Ampere's Law
 - J. Faraday's Law
 - K. Inductance
 - L. Electromagnetic oscillations
 - M. AC circuits

- II. Electromagnetic waves
 - A. Maxwell's Rainbow
 - B. Energy transport and the Poynting Vector
 - C. Radiation pressure
 - D. Polarization
 - E. Interference
- III. Optics
 - A. Reflection
 - B. Refraction
 - C. Diffraction
 - D. Images
 - E. Mirrors
 - F. Lenses
- IV. Modern Physics

LAB

Selected experiments dealing with the above subject matter.

Additional topics may be included at instructor's discretion for lecture or lab.

REQUIRED READING:

Serway, Raymond A. and Robert Faughn. Principles of Physics, 3rd Ed. New York: Saunders College Publishing, 2000.

OR

Heath, Richard. Physics Calculus. 2nd Ed. New York: Addison Wesley, 2000.

AND

Finkenthal, D. Physics 121/201 Lab Experiments. Palomar College, 2001.

SUGGESTED READING:

Faughn, Robert. Life Science Applications to Physics. 1st Ed. New York: Saunders College Publishing, 1996.

Ching, Francis D.K., Building Construction Illustrated. 3rd Ed. New York: John Wiley & Sons, Inc. 2001

REQUIRED WRITING:

The course exams, outside assignments, and laboratory reports emphasize the use of diagrams, data, and physics equations. Some instructors may require a formal lab write-up or the ability to summarize the laboratory in a written form. Problem-solving exercises are highly emphasized in this course.

OUTSIDE ASSIGNMENTS:

Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short-term classes.

Preparation includes such activities as readings in the assigned text, review of lecture and laboratory materials, and solving assigned problems.

INSTRUCTIONAL METHODOLOGY:

Check all that apply:

- lecture
- laboratory
- lecture-laboratory combination
- directed study

This course may be offered as a distance education course and meet Title 5 regulation 55370, 55372, 55374, 55376, 55378, and 55380.

Yes No .

If yes, check all that apply. (See guidelines for preparation for definitions.)

- Television Course (Video one-way, e.g. ITV, video cassette, etc.)
- Online Course (Text one-way, e.g. newspaper, correspondence, electronic file, etc.)
- Two-Way Video Conferencing (Two-way interactive video and audio)
- One-Way Video Conferencing (One-way interactive video and two-way interactive audio)
- Computer Assisted Instruction (A specialized form of mediated instruction relying primarily on student access to information and prepared lessons or teaching materials through a computer terminal, but not under immediate supervision of a qualified instructor.)

GRADING POLICY AND STANDARDS (include methods of determining whether the stated objectives have been met by students):

Grades are primarily determined by student’s scores on term exams and a comprehensive final exam. Exams are principally composed of physics problems that require quantitative solutions. The laboratory work will be weighted at 20% of the total course grade with the remainder to be determined by the instructor.

Suggested Grade Distribution:

Three or more exams	20-40%
Other	0-30%
Final exam	20-40%
Lab	20%

An insufficient performance in lab may result in effectively lowering the course grade by more than 20%.

IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?

Yes No Number of times course may be taken for credit: 1

If yes, identify specific provision of Title 5 Division 2 section(s), 55761-55763 and 58161 which qualifies course as repeatable:

CONTACT PERSON: Daniel Finkenthal

SIGNATURES ON FILE