



Physics II | Lecture and Lab

Academic Year 2020-2021

Course Information

Course Numbers

PHYS216/PHYS216L

Total Units

4 (3 Lecture + 1 Lab)

Time Requirement

75 hrs (Lecture 45hrs + Lab 30hrs)

Course Details

Recommended Prerequisites

Physics 1 or equivalent with a minimum grade of C or better.

Course Description

This is the second course of a two-term algebra-based sequence in general physics focusing on thermodynamics, electricity, magnetism and optics. Topics will include kinetic theory of gasses, thermodynamic processes, waves, electric fields, flux and force, electricity, circuits, magnetism, electromagnetic interactions, induced currents, lenses and mirrors. Students will be able to apply physical laws and principles to practical problems relevant to several scientific fields. Furthermore, the student will understand how observation and experimentation create testable scientific theories and thus offer a strong foundation in problem solving strategies. Students will conduct experiments in lab and submit pre-lab and post-lab assignments describing the relevance of laboratory activities. The laboratory section compliments the theories and concepts discussed in lecture by utilizing hands-on examples. This course is designed to provide an overview of basic biophysics and is primarily for students planning to major in life sciences, medical/dental fields, psychology, and similar professional fields.

Lecture and Laboratory Communication

A website will be set up on Canvas by your instructor.

Log in with your Username and password: <https://scuhs.instructure.com>

Faculty Information

Refer to the Canvas course webpage for this information.

Class Meeting Times

Refer to Canvas course webpage for this information.

Instructional Materials

Required Text(s)

Required Text(s): Physics 3rd Edition by Alan Giambattista, Betty Richardson, Robert C. Richardson

SCU Physics II Laboratory Manual (available on Canvas)

Scientific Calculator: Graphics or text-memory calculators are not allowed for use during quizzes or exams. If you bring one you will have to take your quiz without a calculator. You are encouraged to obtain a scientific calculator with exponents and logarithms immediately, rather than the day before a quiz or an exam. It is important to be comfortable with the calculator that you are using, rather than to be struggling to locate the keys for certain mathematical operations. For example, a TI-30X IIS is acceptable.

Course Purpose

Student Learning Outcomes

At the conclusion of this course, a successful student should be able to:

1. Demonstrate thorough knowledge and understanding of the fundamental principles and core concepts of Physics.
2. Apply their knowledge to appraise scientific and technical literature in the field of Physics
3. Assess problems in the field of physics and develop solutions or strategies to solve those problems based on logic and the knowledge acquired during this course.
4. Professionally construct and express their ideas, thoughts, and concepts in chemistry through written and verbal communication.

Course Schedule

(subject to slight modifications by the instructor)

| Day | Lecture | Assessment |
|-----|--|---|
| 1 | Module 1: Electric Forces and Fields | Class Participation |
| 2 | Module 2: Electric Potential | Reading Assignment 1 & 2 Practice 1 Class Participation |
| 3 | Module 3: Electric Current and Circuits | Reading Assignment 3 Practice 2 Exam 1 |
| 4 | Module 4: Magnetic Forces and Fields | Reading Assignment 4 Practice 3 Class Participation |
| 5 | Module 5: Electromagnetic Induction | Reading Assignment 5 Practice 4 Exam 2 |
| 6 | Module 6: Reflection and Refraction of Light | Reading Assignment 6 Practice 5 Class participation |
| 7 | Module 7: Temperature and the Ideal Gas Law | Reading Assignment 7 Practice 6 Exam 3 |

| Day | Lecture | Assessment |
|-----|--------------------------|---|
| 8 | Module 8: Heat | Reading Assignment 8 Practice 7 Class participation |
| 9 | Module 9: Thermodynamics | Reading Assignment 9 Practice 8 Class participation |
| 10 | Review and final exam | Exam 4 |

Tentative Grading Procedures

Lecture

| Assessment | Weight (%) |
|--------------------------------|-------------|
| Pre-lecture Reading Assignment | 5 |
| In Class Assignments | 10 |
| Practice | 15 |
| Exam 1, 2, 3 | 45 |
| Exam 4 | 25 |
| Total | 100% |

Lab Schedule

(subject to slight modifications by the instructor)

| Laboratory | Assessment |
|---|-------------------------------|
| Lab 1: Electric Charge, Force, and Energy | Pre-lab, lab report |
| Lab 2: Capacitance Simulation | Pre-lab, lab report |
| Lab 3: Capacitors | Pre-lab, lab report Quiz 1 |
| Lab 4: Resistors | Pre-lab, lab report |
| Lab 5: Magnetism | Pre-lab, lab report Quiz 2 |
| Lab 6: Electromagnetic Induction | Pre-lab, lab report |

| Laboratory | Assessment |
|---|-------------------------------|
| Lab 7: Optics | Pre-lab, lab report Quiz 3 |
| Lab 8: Noble Gasses and the Ideal Gas Law | Pre-lab, lab report |
| Lab 9: Law of Cooling and Heating | Pre-lab, lab report |
| Review | Quiz 4 |

Tentative Grading Procedures

Lab

| Assessment | Points | Weight (%) |
|-------------------------------|--------|------------|
| Pre-Labs + Lab Reports | | 40 |
| Lab Quizzes | | 60 |
| Total | | 100% |

Grading scale:

Please note letter grades will be assigned only at the end of the trimester.

A = 90% to 100%

B = 80% - less than 90%

C = 70% - less than 80%

D = 60% - less than 70%

F = less than 60%

W = Withdrawal

Grading procedures:

The format of assessments may include multiple choice, short answer, labelling, fill-in-the-blank, or matching examinations. Participation points are required and will be assigned by the instructor as the course progresses through the use of any of the following: in class mini quizzes, activities, kahoot online quizzes (www.kahoot.it). For online quizzes students must have a phone, tablet, laptop or other internet connected device to participate. Students must be in class during the participation activities to receive participation marks.



Academic Integrity

Visit SCU's [Academic Integrity](#) page to review policies for professionalism and academic integrity.

Teaching Methods and Activities

Attendance: Punctual attendance at each of your regularly scheduled is required. Additionally, you are required to stay until you and/or your group have completed the experiment. Check out with your lab instructor before leaving the laboratory after completing the experiment.

Laboratory Reports: A lab report will be required for all experiments. This consists of data analysis and pre-, and post lab questions. You must complete lab reports individually (lab reports are not group assignments). If you and another student have the same answer because you “worked together” or “helped each other”, it will be considered cheating.

Laboratory Quizzes: You will be given after your experiment and its modality will be indicated by the Professor. These quizzes will be closely based on the reports and pre-labs.

Evaluation of Experimental Technique: You will be assessed on your general performance and regards for the rules of the laboratory and safety procedures.

Best Practices for Studying Physics II

- Read before and read after each class. Skim the chapter before it is covered in lecture to become comfortable with some of the terms associated with each topic. Review each chapter after it is covered in class to enhance your understanding of what was covered in class.
- Participate during class by taking notes during class and looking over them afterwards. Don't skip class, arrive late, or leave early. Ask questions for clarification when you don't understand the material.
- Stay on top of the Practice assignments. Do the assigned problems as close to the time as when the topic is covered in the class to increase the depth of your understanding of specific concepts and will help you learn the material more efficiently and effectively.
- Do not wait until the night before the Practice is due to start the assignment. You will get more out of it if you take the time to really learn the concepts and review the material without being rushed.
- Find a group of students to study with. Seek out students dedicated to doing well in the course. This makes studying more fun and helps you learn the material better by teaching what you know and learning from your peers what you don't know. Explaining these concepts to others will help you learn the material even better.
- Stay focused by finding an environment where you can study with few distractions.



University Policies

Accommodations

As a learning-centered community, Southern California University of Health Sciences recognizes that all students should be afforded the opportunity to achieve their academic and individual potential. The University recognizes and supports the standards set forth in Section 504 of the Rehabilitation Act and

the American with Disabilities Act (ADA). In accordance with its mission and federal and applicable state laws, the University is committed to making reasonable accommodations for qualified applicants for admission and enrolled students with disabilities. A student who needs accommodation(s) due to a disability should contact the Academic Support Office located in the Learning Resource Center.

Faculty and Dr./Patient Relationships

SCU faculty are highly skilled. However, per University Policy, health care is offered to students through the University Health System only. Neither preclinical nor clinical faculty can provide advice, assessment, treatment, or other elements that would be considered part of a Doctor-Patient relationship outside of a clinical setting established for that purpose.

Learning Activities

Students are expected to spend at least two hours for each lecture hour of course time per week in activities and assessments outside the classroom. Examples of activities include, but are not limited to: writing papers; reading articles or text; small group work; presentations; completing assignments; preparation for assessments; online activities and other activities that do not include direct instructor interaction and involvement.

All university policies apply to this course and all others. For full policy information please consult the university SCU Policy Manual. For a quick reference guide to the following policies: make-up examination, F-challenge examination, grade posting, results of failing grades, student support information, syllabus amendments, special needs, student conduct, and attendance, please consult the academic policies document housed on the [Online Student Services](#) .