



蘇州大學  
Soochow University

# PHY 123 Applied Physics

Fall 2023

**Course Credits:** 4

**Contact Hours:** 56 hours

**Instructor:** TBA

**Email:**TBA

## **COURSE OBJECTIVES**

This course focuses on topics such as electromagnetism, waves, optics, heat and thermodynamics, hydrostatics and hydrodynamics, modern physics, and selected applications. Through a combination of lectures, laboratory experiments, and problem-solving sessions, students will develop critical thinking, analytical, and mathematical skills required to solve physics problems. The course also emphasizes the application of physics principles to real-world situations and encourages students to develop a deeper appreciation for the beauty and relevance of physics in everyday life.

Upon Completion of this Course, students will be able to:

1. Understand and apply the fundamental principles of electricity and magnetism
2. Analyze and solve problems related to circuits, electromagnetic fields, and electromagnetic waves
3. Comprehend and explain the principles of geometric and physical optics
4. Develop experimental skills and demonstrate proficiency in laboratory techniques
5. Analyze and solve problems related to circuits, electromagnetic fields, and optics

## **PREREQUISITES**

MAT 110 Calculus I

## **GRADING**

Grades will be determined by accumulating points, with 100 points being the



maximum, as follows:

ITEM	POINTS
Labs	40 Points
Midterm 1	15 Points
Midterm 2	15 Points
Final Exam	30 Points
Total	100 Points

Late submissions will be graded at the end of the course. Grades will be assigned according to the following rule:

$$A \geq 90 > B \geq 80 > C \geq 70 > D \geq 60 > F.$$

We reserve the right to make adjustments to the overall grading policy.

## COURSE MATERIALS

### **Required Texts:**

Raymond A. Serway; John W. Jewett, *Physics for Scientists and Engineers*, 10th Edition, Cengage Learning, 2019.

### **Recommended (Optional) Texts or Other Materials:**

None

## COURSE TOPICS

MODULE	TASKS
Module 1	<b>Topics:</b> Topic 1: Physics and Measurement Topic 2: Circular Motion and Other Applications of Newton's Laws Topic 3: Energy of a System Topic 4: Conservation of Energy <b>Assessments:</b> Lab#1



Module 2	<b>Topics:</b> Topic 5: Universal Gravitation Topic 6: Fluid Mechanics Topic 7: Oscillations and Mechanical Waves Topic 8: Wave Motion <b>Assessments:</b> Lab#2
Module 3	<b>Topics:</b> Topic 9: Superposition and Standing Waves Topic 10: Thermodynamics Topic 11: The First Law of Thermodynamics Topic 12: Heat and Internal Energy <b>Assessments:</b> Midterm#1 Lab#3
Module 4	<b>Topics:</b> Topic 13: The Kinetic Theory of Gases Topic 14: Heat Engines, Entropy, and the Second Law of Thermodynamics Topic 15: Electric Fields Topic 16: Electric Potential <b>Assessments:</b> Midterm#2 Lab#4
Module 5	<b>Topics:</b> Topic 17: Conductors in Electrostatic Equilibrium Topic 18: Current and Resistance Topic 19: Direct-Current Circuits Topic 20: Light and Optics <b>Assessments:</b> Final Exam

## ATTENDANCE

1) Class attendance is required. Missing classes without permission will lead to decrease in overall grade.

Missing less than two classes: no penalty.

Missing more than two classes: 7% will be taken off from the overall grade.

If the instructor reports a student's frequent missing of class to the Soochow University Academic Administration Office, the student might get a written warning and might be prohibited from attending final exam.



2) Participants in this course are expected to arrive in class promptly and adequately prepared. The primary objective of this course is to critically engage with the readings and the subject matter. Therefore, course participants are expected to have completed the reading prior to class and prepare thoughtful reflections/commentaries to share with fellow colleagues.

### **LEARNING REQUIREMENTS**

- 1) Late assignments are not acceptable and are subjected to grade deductions.
- 2) Assignments submitted in the wrong format will be counted as not submitted.
- 3) Failure to submit or fulfill any required course component results in failure of the class.
- 4) Make-up for midterm and final exams only with valid excuses, as defined by the University.
- 5) In order to earn a Certificate of Completion, participants must thoughtfully complete all assignments by stated deadlines and earn an average quiz score of 50% or greater.

### **TECHNOLOGY POLICY**

The use of electronic devices in class is distracting, both for the user and for the rest of the class. Only non-programmable calculators can be used in the tests and exam. Any attempts to use cell phones and other electronic communication devices will be seemed as cheating. Laptops are discouraged, unless you use them for activities DIRECTLY related to the course (eg., note taking, reading course documents).

### **ACADEMIC INTEGRITY POLICY**

Soochow University highly values the academic integrity and aims to promote the academic fairness, honesty and responsibility. Any academic dishonesty behaviors and any attempts to cheats and plagiarism will be reported to the university administration office. A written warning and the relevant penalties will be imposed. The record might be shown on the official university transcript.

### **DISABILITY ACCOMMODATION**



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Soochow University is committed to maintaining a barrier-free environment so that students with disabilities can fully access programs, courses, services, and activities at Soochow University. Students with disabilities who require accommodations for access to and/or participation in this course are welcome.

Note:

Please contact the University Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material.