



PHY 117 Fundamental of Physics II

Summer 2024

Course Credits: 4

Contact Hours: 56 hours

Instructor: TBA

Email: TBA

COURSE OBJECTIVES

This course examines the fundamental ideas of electric and magnetic fields, including Gauss' Law, Ampere's Law, Faraday's Law, and Maxwell's equations. Students will master the analytical tools for higher study and real-world applications in electromagnetism by working on practical applications such as comprehending electromagnetic waves and radiation.

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

1. Apply Gauss' s Law, Ampere' s Law, and Faraday' s Law to solve electric and magnetic field problems.
2. Describe electromagnetic radiation properties and behaviors.
3. Explain basic quantum physics concepts like wave-particle duality.
4. Solve complex problems in current electricity, electromagnetic radiation, optics, and quantum physics using appropriate frameworks.

PREREQUISITES

PHY 116 Fundamental of Physics I

GRADING

Grades will be determined by accumulating points, with 100 points being the maximum, as follows:

ITEM	POINTS
Attendance	10 Points



Quizzes	15 Points
Midterm	25 Points
Project	20 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:

David J. Griffiths, *Introduction to Electrodynamics*, 4th Edition, Pearson, 2017.

Recommended (Optional) Texts or Other Materials:

None

COURSE TOPICS

MODULE	TASKS
Module 1	Topics: Topic 1: Vector Analysis Topic 2: Field Lines, Flux, and Gauss's Law Topic 3: Potentials Topic 4: Electric Fields in Matter Assessments: Quiz#1
Module 2	Topics: Topic 5: Gauss's Law in the Presence of Dielectrics Topic 6: Magnetostatics Topic 7: Currents Topic 8: Ampère's Law Assessments: Quiz#2 Project



Module 3	Topics: Topic 9: Magnetic Fields in Matter Topic 10: Physical Interpretation of Bound Currents Topic 11: Ampère’s Law in Magnetized Materials Topic 12: Electrodynamics Assessments: Midterm Project
Module 4	Topics: Topic 13: Electromagnetic Induction Topic 14: Faraday’s Law Topic 15: How Maxwell Fixed Ampère’s Law Topic 16: Conservation Laws Assessments: Quiz#3 Project due
Module 5	Topics: Topic 17: Electromagnetic Waves Topic 18: Potentials and Fields Topic 19: Radiation Topic 20: Electrodynamics and Relativity Assessments: 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

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:



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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.