Principle of Physics II

Last Updated: Tue, 12/16/2025

Course prefix: PHYS

Course number: 2212

Section: A

CRN
20655

Instructor first name: Martin

Instructor last name: Mourigal

Semester: Spring

Academic year: 2026

Course description:

This course deals with electric and magnetic interactions, which are central to the structure of matter, to chemical and biological phenomena, and to the design and operation of most modern technology. The main goal of this course is to have you engage in a process central to science: the attempt to model a broad range of physical phenomena using a small set of powerful fundamental principles.

The specific focus is on an introduction to field theory in terms of the classical theory of electricity and magnetism. To aid in this goal, you will develop computational models to visualize these fields and the interaction of charged particles. These models will be made using the Visual Python programming language. The course also emphasizes the atomic structure of matter, especially the roles of electrons and protons. This is a calculus-based course.

Academic honesty/integrity statement:

Students are expected to maintain the highest standards of academic integrity. All work submitted must be original and properly cited. Plagiarism, cheating, or any form of academic dishonesty will result in immediate consequences as outlined in the university's academic integrity policy.

The policy on academic honesty, as stated in the Honor Code, will be fully enforced during this course for both the instructors and students. All Honor Code violations will be referred to the Dean of Students' office.

- Collaboration with other students in this course on homework, lab, and in-class assignments is permitted and encouraged.

    - For lab experiments, students are allowed to collaborate on performing the experiment and collecting data, but all data analysis, coding, and video lab reports must be completed individually.
- Collaboration is NOT PERMITTED during tests or the final exam.
    - These activities are closed internet, closed books, closed notes, with the following exceptions:
        - Students are allowed to have a copy of the formula sheet on Canvas (which will be included in the exam papers).
        - Students are allowed blank sheets of paper (which will be included in the exam papers).
        - Students are allowed a calculator (as long as it cannot communicate with other calculators, which means no smartphone calculator apps are permitted).
    - Students must work on the tests individually and receive no assistance from any other person or resource.
    - Work submitted outside of the testing period will not be graded.
- Students who post course content to online resources external to Georgia Tech (e.g, Chegg) will be referred to the Dean of Students' office for Academic Misconduct.

Core IMPACTS statement(s) (if applicable):

This is a Core IMPACTS course that is part of the Technology, Mathematics & Sciences area.

Core IMPACTS refers to the core curriculum, which provides students with essential knowledge in foundational academic areas. This course will help master course content, and support students' broad academic and career goals.

This course should direct students toward a broad Orienting Question:

- How do I ask scientific questions or use data, mathematics or technology to understand the universe?

Completion of this course should enable students to meet the following Learning Outcome:

- Students will use the scientific method and laboratory procedures or mathematical and computational methods to analyze data, solve problems and explain natural phenomena.

Course content, activities and exercises in this course should help students develop the following Career-Ready Competencies:

- Inquiry and Analysis
- Problem-Solving
- Teamwork