Physics 270: Introductory and Modern Physics II

Fall 2022, On-line

Asynchronous

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Office Hours:	Roughly all day Monday at `https://gmu.zoom.us/j/6056774436?pwd=ZldVWUxlWmIweml3Yml1RVE0RmhLQT09` and by appointment
Website:	`http://prubin.physics.gmu.edu/courses/270/`

Please note:

- All e-mail communication from the instructor concerning this course will be to GMU accounts only.
- If you are a student with a disability and you need academic accommodations, please see me **and** contact the Office of Disability Resources at 703.993.2474. All academic accommodations must be arranged through that office.

Course Goal:

1. Introduce basic physics concepts and techniques

   This is a first course in a calculus-based, introductory physics sequence. The most important thing you will learn is how to solve word problems: understanding what is being asked, estimating an answer, conceptualizing and undertaking a systematic approach toward a solution, checking results, and modifying, if necessary, your understanding and/or approach. The physical models you will be exposed to are those of contemporary physics, including special relativity and quantum mechanics.

2. Understand the nature of science

   This is a GMU natural science with laboratory general education course. General education natural sciences courses engage students in scientific exploration; foster their curiosity; enhance their enthusiasm for science; and enable them to apply scientific knowledge and reasoning to personal, professional, and public decision-making.

   To achieve these goals, students will:

   (a) understand how scientific inquiry is based on investigation of evidence from the natural world, and that scientific knowledge and understanding:

      i. evolves based on new evidence

ii. differs from personal and cultural beliefs

(b) Recognize the scope and limits of science.

(c) Recognize and articulate the relationship between the natural sciences and society and the application of science to societal challenges (e.g., health, conservation, sustainability, energy, natural disasters, etc.)

(d) Evaluate scientific information (e.g., distinguish primary and secondary sources, assess credibility and validity of information)

(e) Participate in scientific inquiry and communicate the elements of the process, including:

i. Making careful and systematic observations

ii. Developing and testing a hypothesis

iii. Analyzing evidence

iv. Interpreting results

Texts: None required. Assigments are in the form of readings and embedded problems. Any introductory physics textbook may be referred to for additional insight.

Expectations:

Students are expected to complete assigned readings and problems in advance of weekly (two-hour) meetings. Working with others to get started or overcome difficulties is encouraged, but not required. The weekly meetings will be conducted in a tutorial style, in which students review the reading, discuss difficult or confusing points, and, most importantly, present solutions to problems embedded in the reading.

Preparation for weekly meetings accounts for 60% of the final grade. Additional hours are available to students at their request to help prepare for or review weekly meeting topics.

Reeworking and submission of problems not fully solved will be required. Submission of these redone problems account for an additional 25% of the final grade.

Of the remaining 15% of the final grade, 10% will be assigned on the basis of a one-on-one, oral, final examination, and 5% will depend on the completion of pre- and post-tests.

Grading:

- Preparation for weekly meetings, 60%; reworked problems 25%, oral final examination 10%, completion of pre- and post-tests 5%

A+ = 100-93.33%	A = 93.32-86.67	A- = 86.66-80
B+ = 79.99-73.33	B = 73.32-66.67	B- = 66.66-60
C+ = 59.99-53.33	C = 53.32-46.67	C- = 46.66-40
	D = 39.99-20	
	F < 20	

Tentative Schedule:

Students will meet weekly with the instructor except during the week of Thanksgiving, 21 November.

Attendance and Tardiness: Preparation for and on-time attendance at weekly sessions are required. One-third of the credit for a session will be deducted for tardiness. Two-thirds will be deducted for lack of preparation. All credit will be lost if a session is missed.

Disruptive Behavior: It is expected that students will engage constructively at the weekly session, prepared to offer and explain solutions to the problems assigned.

Honor Code Violations: The work presented must be the student's own. Plagiarism and cheating will be punished with failing grades and trial by the honor committee. It's important to appreciate that science is impossible when dishonesty, in any manifestation, exists.

The GMU Honor Code: `https://oai.gmu.edu/mason-honor-code/`