Syllabus PHY2061

PHY 2061 — Honors Physics 2 — Spring 2022

Course: PHY 2061, Honors Physics 2

Section 3691 (class number 16493) is face to face (FTF) Tuesday and Thursday in room 1002 Periods 2-3 (8:30 – 10:25 am). At the time this was written, masks are expected in class.

If you are experiencing COVID-19 symptoms (Click here for guidance from the CDC on symptoms of coronavirus), please use the UF Health screening system and follow the instructions on whether you are able to attend class. Click here for UF Health guidance on what to do if you have been exposed to or are experiencing Covid-19 symptoms.

- In the case of an excused absence, you will be given a reasonable amount of time to make up work. Find more information in the university attendance policies.

Instructor: G. R. Stewart, Office NPB 2132, phone 392-9263, e-mail stewart@phys.ufl.edu, **Office Hours via Zoom:** to be arranged the first day of class or anytime by arrangement

Course Description: This is the second semester of the Enriched Physics with Calculus (Honors Physics) sequence PHY 2060–2061 for students with prior preparation in physics who wish to acquire a deeper understanding of the subject. The enriched sequence covers similar material to the Physics with Calculus sequence PHY 2048–2049, but treats basic topics at a faster pace, incorporates more advanced material, and places greater emphasis on instilling conceptual understanding and on developing the ability to solve more challenging problems. PHY 2061 covers concepts in electromagnetism.

Prerequisites: This course requires that you have studied Newtonian mechanics in a previous calculus-based physics course such as PHY 2060 and at least have co-registered in a vector calculus course (Calc 3).

Topics: Maxwell's electromagnetic theory breaks into four broad subdivisions that concentrate on static and dynamic aspects of the theory.

- Electricity: Coulomb's law, electric field, Gauss's law, electric potential, electric materials (Chapters 25–31)
- Magnetism: Lorentz force, magnetic field, Ampère's law (Chapters 32–33)
- Induction: Faraday's law, magnetic materials, AC circuits (Chapters 34–37)
- Maxwell's equations, (Chapter 38)

Course Schedule (see Canvas web site)

Grading: Grades will be based 30% on homework sets, 20% on each of the two midterm exams and 30% on the cumulative final exam.
Homework: Homework will be due via email each Tuesday at the beginning of class, i. e. by 8:30 am. Solutions to the homework will be posted on the class' Canvas/e-Learning web site after class on Tuesday (which means that there is no homework later than 8:30 am, Tuesday, accepted.) **The final exam** is Monday 4/25/2022 @ 10:00 AM - 12:00 PM. Exam is cumulative and given in room 1002. Two midterm exams will be given in room 1002 during a normally scheduled class period. Closed book, with 1 formula sheet 8.5x11" allowed. The anticipated letter grade scale is A: 85%; A-: 81%; B+: 77%; B: 70%; B-: 65%; C+: 60%; C: 50%; C-: 45%. For information on current UF grading policies for assigning grade points, see link to the university grades and grading policies.

The following paragraphs of advice on how to do well in Physics are shamelessly plagiarized from an earlier class. You are of course free to make your own choices, but - if you should feel inclined to accept advice (which although 'free' is not of zero worth) - you will find it helpful:
I do not take daily attendance, but it is to your advantage to *attend class*. You may spend most of your time distracted by things other than physics, but in between you will have the opportunity to learn what subjects I think are important, and you can then concentrate on these subjects during your reading. If by some unfortunate set of circumstances you do miss class, do not ask me if I said anything important. Instead, ask a classmate; she or he is likely to give an honest answer, and you won't offend me. There will be a substantial number of examples discussed in class that are not in the textbook, and examples in class *will*, in some sort of modified form, appear on tests. If you miss class you will not do as well in this course.
Do the assigned homework. This is the drudge part of physics, but it is absolutely necessary. We will learn grand ideas and see their wondrous applications in class. But, your understanding is only superficial unless you can apply these same grand ideas to completely new circumstances. In course work, this is usually done with homework problems. Do not be surprised if the homework is frustrating at times; solving one challenging problem makes the next much easier. And homework problems often appear on tests. Doing all of the homework is the easiest way to improve your grade. Not doing homework is the easiest way to lower your grade.

Textbook: The course text is

- David Halliday, Robert Resnick, and Kenneth S. Krane, *Physics*, Volume 2 (5th edition, Wiley, 2001).

This text is required, meaning that you will be assumed to have access to this text to complete reading and homework assignments.

Other books:

- *Electricity and Magnetism*, Berkeley Physics , Vol. II (McGraw-Hill).
- Richard P. Feynman, Ralph B. Leighton, and Matthew Sands, *The Feynman Lectures on Physics*, in three volumes (Addison-Wesley/Prentice Hall).

- David J. Griffiths, *Introduction to Electrodynamics*, 3rd edition (Addison-Wesley). This book is more advanced, often used in the upper level physics E&M sequence, but still can be useful.

Outside Help Services: The Teaching Center in Broward Hall (tel. 392-2010) offers a range of free services, including individual tutoring in physics.

Accommodations: Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. Click here to get started with the Disability Resource Center. (This link leads to a *really thorough* web site that should answer all your questions.) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Online course evaluation process: Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Click here for guidance on how to give feedback in a professional and respectful manner. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students here.

Academic Honesty: All University of Florida students are required to abide by the University's Academic Honesty Guidelines and by the Honor Code, which reads as follows: *We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."* Cheating, plagiarism, or other violations of the Academic Honesty Guidelines will not be tolerated and will be pursued through the University's adjudication procedures.