Introduction to Physics II

Physics 003, Spring 2017

Current as of February 17th, 2017

INSTRUCTIONAL TEAM

- Instructor: Prof. Brian R. Hill, Ph.D. (follow link for contact info)
- Teaching Assistant: Christopher Gloudeman
- Laboratory Instructor (Physics 4): Prof. Edward Boyda

TEXT

This is the same author (Richard Wolfson) and series you used Vol. 1 of last semester:

- Essential University Physics: Vol. 2 and MasteringPhysics with Pearson eText — ValuePack Access Card, 3/e by: Wolfson, ISBN-10: 0134197291, ISBN-13: 9780134197296

One difference is that this semester we will use Pearson's MasteringPhysics for the assignments instead of WebAssign in order to get closer alignment to the textbook.

If you buy a used or digital copy of the textbook, you still need to buy MasteringPhysics to do the assignments. Be careful of on-line scams where the MasteringPhysics access card has been used or removed, and they are trying to resell the text as if it were complete. The campus bookstore is the surest way to avoid a scam.

OUTLINE

We are using a minimalist text. You are responsible for everything in it in the chapters assigned, whether or not it is explicitly singled out in class. Our course will follow the sequence of Wolfson, and cover all of Part 4 and Part 5 of Volume 2:

- Unit 1: Electrostatics, Chapters 20-22
- Unit 2: Capacitors, Currents and RC Circuits, Chapters 23-25
- Unit 3: Magnetism, LRC Circuits and Maxwell's Equations, Chapters 26-29
- Unit 4: Waves and Optics, Chapters 29-32

I will occasionally have reading quizzes to help set the expectation that when I assign reading, it is not something you can just skip.

It would be nice if we had 16 weeks (the traditional semester length) to cover this material, but we have 13. There are 13 chapters, so that means the train has to roll at a pace of a chapter a week. That's a good clip. Don't fall behind. It will be hard to catch up and re-board.

ASSESSMENT AND EXPECTATIONS

30% for the problem sets and any reading quizzes, 15% on each of three midterms (totaling 45%), 25% final.

Unless otherwise specified, on-line problem sets must be submitted by the beginning of class (11:45am) on the day they are due. The same policy also applies to the occasional handed-in and manually graded problem set, although I won't be quite as strict when the clock strikes 11:46 as the MasteringPhysics servers. If you can't do a problem on a manually graded problem set, at least set up what you can and hand that to get partial credit.

Missed quizzes, problem sets or midterms will not be accommodated without an explanatory note. Missing a class is not in and of itself an excuse (in fact it is a problem), and it certainly does not create any automatic extension on the material that was assigned or due at the missed class.

Expectations for students and lecturer:

- Engaged participation in class — except when required for class exercises, computers and cell phones may not be used.
- Honesty in communication and in written work.
- Effort.

COMMENTARY ON PHYSICS WITH CALCULUS

Sums and algebra are nice, but one of the things that separates someone who is good at physics and math from the great majority of people is the ability to apply derivatives and integrals to the real world, which often presents continuous distributions and time- or spatially-varying phenomena, statements about which simply do not reduce to algebra or sums. Either calculus was going to appear or

quantitative science and its applications were going to grind to a standstill.

I am deliberately selecting problems that strengthen your ability to reason with calculus. The alternative (physics without calculus) is pretty much synonymous with "conceptual physics." That is also valuable as a life-long level of understanding, but ultimately limited compared to what you will learn in this class.

STEM CENTER TUTORING

Saint Mary's has a new center in Assumption 200 for students studying Science, Technology, Engineering, and Mathematics (STEM). The STEM Center will provide several useful services, including free tutoring in math, chemistry, physics, and biology. The core math/physics hours are 7-9PM and the core chemistry hours are 6-8pm. Added and updated hours will be posted in the STEM Center: Assumption 200. The STEM Center is also a great place to meet up with your classmates to study any time between 11am and 9pm. Please be very respectful of the Assumption Hall residents.

STUDENT DISABILITY SERVICES

Reasonable and appropriate accommodations, that take into account the context of the course and its essential elements, for individuals with qualifying disabilities, are extended through the office of Student Disability Services (SDS). Students with disabilities are encouraged to contact the Student Disability Services Coordinator at (925) 631-4164 to set up a confidential appointment to discuss accommodation guidelines and available services. Additional information regarding the services available may be found on the SDS Office Website.