University of California, Berkeley, Department of Physics

Physics 7B, Lectures 2&3: Course Information Sheet, Fall 2020

Lecture 2,3 Instructor	Lecture Info	Instructor Office Hours
Alessandra Lanzara	Tu,Th	Mon. 1:00pm – 2:00pm
Office: 321 Birge	Recorded via Zoom	Wed. 1:00pm – 2:00pm
Email: alanzara@lbl.gov	and uploaded to bCourses	

First two weeks: Discussion and lab (D/L) section begin on the first day of instruction. You **must** attend your discussion and laboratory (DL) sections during the first two weeks of class to remain enrolled in the class. If you are in a time zone that makes attending your discussion section difficult, let your section GSI know. Any enrollment changes **must** be done via CalCentral. You must attend your enrolled DL section. If you still have a problem, then contact the Head GSI.

Drop Deadline: **September 4th**

Head Graduate Student Instructor: Jacob Leedom, leedoj@berkeley.edu

Any and all administrative issues should be addressed directly to the Head GSI.

7B Course Center: Virtual – either Zoom or Gather.

Course Webpage: bcourses.berkeley.edu

Prerequisites: Physics 7A, Math 1A and 1B; Math 53 should be taken concurrently.

Professor Lanzara's Office Hour Link: TBA

Texts:

- D. C. Giancoli, *Physics for Scientists and Engineers*, Volume 2 (custom edition for the University of California, Berkeley), 4th edition. You will generally be expected to read those sections of the book relevant to a given lecture before class. This is a **required** text.
- *7B Workbook*, by Hedeman, which will be packaged with Giancoli at the student bookstore. These will be used in section and are **required**.
- Mastering Physics. The workbook and Giancoli, along with Mastering Physics, are being sold as one unit. An access code to Mastering Physics is **required.**
- Elby, *Portable TA: Problem Solving Guide, Volume 2*. Students who wish to try extra problems may find this resource useful, which contains practice problems about electricity and magnetism with completely worked-out solutions. It is meant to be *worked*, not read. These practice problems are for your own benefit; we will not collect your work on them. We suggest working through at least some of the problems in Elby before attempting each week's homework assignment. This is a **suggested** text.

Virtual 7B Course Center: An important part of learning and doing Physics is interacting with others to solve problems. Since we cannot interact locally this semester, we will set up the Virtual 7B Course Center workspace where you can meet, discuss, and work with your fellow students. This will also be where the GSIs will conduct their office hours. We are still in the process of finalizing the workspace, but it will take the form of either a permanent Zoom room or a Gather space. Stay tuned for more information.

Exams and grades: There will be two midterm examinations and a final exam. Dates and times are listed on syllabus. Exams cannot be rescheduled and must be taken at the scheduled time. Anyone with an unresolvable conflict with exam dates (like another prescheduled exam in a different class) needs to contact the Head GSI immediately. Grades will be determined from a weighting of all the elements of the course approximately as follows:

1st midterm exam 20%
2nd midterm exam 20%
Final exam 40%
Homework 10%
Laboratory 10%

A grade of "Incomplete" will only be given under dire circumstances beyond a student's control, and only when work already completed is of at least C quality. University guidelines specify that in lower division courses, the total percentage of students getting an A should be roughly 25%, the percentage of students getting a B should be roughly 40%, and the percentage of students getting a C should be roughly 35%. We will be following these approximate guidelines. The grade of D or F will also be given to a small percentage of students displaying especially poor performance.

Homework Subscription: All of our homework will be done through an internet subscription service, Mastering Physics. You can register for your Mastering Physics subscription by either purchasing a registration card along with your textbook, or online at the Mastering Physics site with a major credit card when you log on. Duplicate subscriptions will be deleted. You can log on to our homework service at this address: http://www.masteringphysics.com .

To log in to Mastering Physics, you need:
Student Access Code: purchase at the bookstore or on the Mastering Physics website
Student ID: Your 8-digit Cal student ID
Course ID: **leedom53265**
UC Berkeley Zip Code: 94720

We strongly encourage you to try logging on to Mastering Physics today! If you have any problems logging in, email the Head GSI immediately, include the phrase "Mastering Physics" in the subject.

Virtual Lecture Information: Lectures will be pre-recorded with Zoom and uploaded onto bCourses, either weekly or bi-weekly.

Homework: Working on homework problems is central to your learning the course material. You will have a weekly problem set of approximately 10 problems of varying difficulty, due as listed on the Mastering Physics website (generally **Friday at 11:00pm**). Assignments will

appear on your Mastering Physics account approximately 7 days before they are due. Generally, homework will be due by **11:00pm on Fridays,** with possible exceptions when there is a midterm that week. The first assignment "Introduction to MasteringPhysics" is not graded, and is really a worksheet on using Mastering Physics. The due date for the first assignment is September 6, 2019, at 11:59pm. The second assignment "Homework 1" is your first real homework set of the semester. **Late homework will not be accepted.** We will, however, drop your lowest homework score.

We encourage you to work with your peers on homework and learn from each other. However, when you submit an assignment online, you are stating that the solutions that you are presenting are *your own*, and not copied from any source. You will only learn from doing the problems if in the end you can formulate your *own* solutions! Violation of this policy is considered cheating.

Solution sets to all of the problems will be available on the website after the due date.

MasteringPhysics is an online physics homework system, and thus by extension it would seem that students should do their homework online, in front of the computer. You are discouraged from doing so. Rather, we strongly recommend that every week, after the homework is posted, you print out the homework from the computer, and then you go away from the computer and complete your homework assignment on white paper. After you have completed the assignment, go back to the computer, and input your answers. Then, for those problems that you got wrong, go back to your written work and look to see where a mistake was made. Make sure that you write a coherent argument for each problem on your written solutions so that you can check your work. After you have completed a homework assignment, save your written solutions, and this way you will have a written record of how you did the homework problems that you can refer to later when studying for exams.

Note, with Mastering Physics you have six chances to submit each homework part for grading, with a penalty for each submission. Hints are available online, but you will receive a little extra credit for not using them.

Discussion/Laboratory Sections: Learning physics means *doing* physics—discussing physics concepts, working in the laboratory, and working (many) physics problems. Your Discussion/ Laboratory Sections ("DLs") are designed to help you learn the course material by working with it in as many ways as possible. In most of your DL sessions you will be working in groups, with help from your GSI, on materials that we have developed to do the following: help improve your conceptual understanding of the course material, see how the material relates to everyday life, and build strong problem solving skills for each topic. The goal is for *you* to learn how to do physics, and the sections will thus not be based on your GSI lecturing or solving sample problems on the board while you just watch. You will not be graded on your performance in solving worksheet problems; they are, rather, for your practice.

Virtual Section Information: The discussion and laboratory sections will be held via Zoom at their scheduled times. The GSI of your section will provide you with a link to the Zoom sections. We realize that not everyone will have conditions conducive to attending sections scheduled in

PDT time. Therefore, the discussion/lab sections will be recorded, uploaded, and made accessible to everyone. **We strongly recommend that everyone that can attend sections to do so.**

Labs: In some weeks, as shown on the Course Syllabus, you will complete laboratory exercises that are also designed to help you explore the main course concepts. You will get your labs listed as parts of the workbook available at the bookstore. **Lab sections meet every week** regardless of whether there is a lab for that week. Your work for the labs will be completed on handouts that can be found in your Physics 7B Workbook. Since in-person labs are impossible this semester, we will have pre-recorded videos that you must watch to answer the lab handout questions. Labs must be submitted within 24 hours of your scheduled lab time. We will also be incorporating virtual modules related to the labs when available. **Uncompleted labs will count as a "zero" in computing your course grade, and your final course grade will be further reduced by 1/3 letter (B+ to B, etc.) for each missing lab. If you are in trouble** (behind in homework, doing worse in the course than you would like, etc.) for whatever reason, please let us know. We'll try to help! Additional help is available through the Student Learning Center (Golden Bear Center), the Honors Society, the Society of Physics Students, and the Physics Scholars Program. Inquire in the Physics Department Undergraduate Student Services Office (368 LeConte Hall) for further information.

There is quite a lot of material in this course, and not a lot of time to learn it. There are many resources available to help you. We strongly encourage you to take advantage of them.

Inclusion: We are committed to creating a learning environment welcoming of all students that supports a diversity of thoughts, perspectives and experiences, and respects your identities and backgrounds(including race/ethnicity, nationality, gender identity, socioeconomic class, sexual orientation, language, religion, ability, etc.) To help accomplish this:

- If you have a name and/or set of pronouns that differ from those that appear in your official records, please let us know.
- If you feel like your performance in the class is being impacted by your experiences outside of class (e.g., family matters, current events), please don't hesitate to contact us. We want to be resources for you.
- We (like many people) are still in the process of learning about diverse perspectives and identities. If something was said in class (by anyone) that made you feel uncomfortable, please contact us about it.
- As a participant in this class, recognize that you can be proactive about making other students feel included and respected.

Accommodation policy: We honor and respect the different learning needs of our students, and are committed to ensuring you have the resources you need to succeed in our class. If you need religious or disability-related accommodations, if you have emergency medical information you wish to share with us, or if you need special arrangements in case the building must be evacuated, please share this information with us as soon as possible.

Physics 7B Syllabus, Fall 2020

Prof. A. Lanzara - Lecture 2 & 3

Week	Dates	Topics	Reading	Labs/Exams
1	8/27	Intro, thermal expansion, ideal gas law	17	
2	9/1, 9/3	Kinetic theory, phase diagrams, First law	18	
3	9/8, 9/10	First law, Specific heat, adiabatic processes	19	
4	9/15, 9/17	Second Law, Heat Engines	20	
5	9/22, 9/24	Electric charge, force, field, dipole	21	Heat engine
6	9/29, 10/1	Electric flux, Gauss's law	22	***Midterm 1***
7	10/6, 10/8	Electric Potential	23	
8	10/13, 10/15	Capacitors	24	Equipot. lines & E. field
9	10/20, 10/22	Current, Ohm's law, resistors	25 – 26	
10	10/27, 10/29	DC circuit, Magnetic force	26 - 27	DC circuits
11	11/3, 11/5	Magnetic dipole, torque, Hall effect	27	***Midterm 2***
12	11/10, 11/12	Ampère's law	28	
13	11/17, 11/19	Biot Savart Law, Electromagnetic induction	28 - 29	e/M
14*	11/24	Inductance, Faraday's law	29	
15	12/1, 12/3	LR and LC circuits; Maxwell's equations	30	O-scope & time dep. circuits
16	*12/7 – 12/11*	*Reading/Review/Recitation Week*	*No new material*	
17	*12/16*	***Final examination***	---	---

*Holidays – no class:
November 26, 27 – Thanksgiving Break

Sections covered per chapter:

Ch 17.1 – 17.9
Ch 18.1 – 18.3, 18.5-18.6
Ch 19.1 – 19.10
Ch 20.1 – 20.6
Ch 21.1 – 21.11
Ch 22.1 – 22.3
Ch 23.1 – 23.8
Ch 24.1 – 24.6
Ch 25.1 – 25.5, 25.7 – 25.9
Ch 26.1 – 26.5
Ch 27.1 – 27.5, 27.8
Ch 28.1 – 28.7
Ch 29.1 – 29.4, 29.6 – 29.7
Ch 30.1 – 30.5

Exam Schedule

MIDTERM 1

Review Sessions 1: TBA
Review Sessions 2: TBA

Midterm 1, Lecture 2&3: Tuesday, September 29, 7:00 – 9:00PM, Virtual

MIDTERM 2

Review Sessions 1: TBA
Review Sessions 1: TBA

Midterm 2, Lecture 2&3: Tuesday, November 3, 7:00 – 9:00PM, Virtual

FINAL EXAMS

Lecture 2: Wednesday, December 16, 3:00 – 6:00 PM, Virtual
Lecture 3: Wednesday, December 16, 8:00 – 11:00 AM, Virtual

Please check on bCourses for any updates or further information.