University of California, Berkeley, Department of Physics
Physics 7B, Lectures 2 and 3: Course Information Sheet, Spring 2019

Lecture 2

Instructor	Lecture Info	Instructor Office Hours
Nathan D Lowhorn	Tue/Thu, 1 LeConte	Mon/Wed: 4:00-5:00pm
Office: 384 LeConte	2:00PM – 3:30PM	Tue/Thu: 3:30-4:30pm
Email: nlowhorn@berkeley.edu		

Lecture 3

Instructor	Lecture Info	Instructor Office Hours
Jonathan Wurtele	Mon/Wed/Fri, 1 LeConte	Mon 3:00PM-4:00PM
Office: 441 Birge	1:00PM – 2:00PM	
Email: wurtele@berkeley.edu		

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. 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.

Early Drop Deadline: **February 1st**

Head Graduate Student Instructor: Illan F. Halpern, illan@berkeley.edu

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

7B Course Center: 107 LeConte (GSI office hours and work with other students)

Course Webpage: bcourses.berkeley.edu

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

Texts:

- D. C. Giancoli, *Physics for Scientists and Engineers*, Volume 2 (custom edition for the University of California, Berkeley), 4th edition. You are 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. It contains practice problems on electricity and

magnetism with completely worked-out solutions. These practice problems are for your own benefit; we will not collect your work on them. This is a **suggested** text.

Exams and grades: There will be two midterm examinations and a final exam. Dates and times are listed on the 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%

In addition, you can receive 2 bonus percentage points for attending 50% of discussion sections; if you attend fewer than 50% of discussion sections, you will not receive these bonus points.

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. As per university guidelines, 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%. Grades of D or F may 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 obtain your Mastering Physics subscription by either purchasing a registration card along with your textbook, or online at the Mastering Physics site: 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.
Note: Student access codes are good for up to 24 months. If you have purchased one recently, e.g. for a previous course, it may still be valid.
Student ID: Your 8-digit Cal student ID
Course ID: **PHYSICS7BSPRING2019**
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.

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 **Sundays 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 Sundays,** with possible exceptions when there is a midterm that week. The first assignment "Introduction to Mastering Physics" is not graded, and is really a worksheet on using Mastering Physics. The due date for the first assignment is **January 27, 2017, at 11:00pm**. 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.

Mastering Physics 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, 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, return 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. 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 out (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: to help improve your conceptual understanding of the course material, to see how the material relates to everyday life, and to 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. We expect all students to attend and participate in sections, but you will not be graded on your performance in solving worksheet problems; they are, rather, for your practice.

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. You will hand in your work before you leave the lab. Because our labs are closely integrated with the rest of the course, they must be completed

when scheduled. **If for a valid reason (e.g., illness) you must miss your DL section's lab time, alert your GSI and try to complete the lab with another DL section during that same week.** We will also leave one set-up in the room for an additional week, so if necessary one time during the semester with approval from your GSI, you may make up a lab in a different DL section the following week. **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.**

Special accommodations: As per DSP rules, if you need disability-related accommodations in this class you should personally meet with the professor as soon as the Letter of Accommodation has been approved and provide a hard copy of the Letter to the professor. Instructions will be given to you on how to proceed. Generally, the instructions will be to contact and follow the head GSI's directives in matters of exam meeting times and locations.

If you have emergency medical information you wish to share with the professor, or if you need special arrangements in case the building must be evacuated, please inform your professor immediately.

To meet with your professor please see him after class, at office hours, or arrange a meeting at his office.

Intellectual Honesty: The student body of UC Berkeley has adopted the following honor code.

"As a member of the UC Berkeley community,
I act with honesty, integrity, and respect for others."

It is expected that you will adhere to this code.

Collaboration and Independence*:* Reviewing lecture and reading materials, working practice problems, and studying for exams can be enjoyable and enriching things to do with fellow students. This is recommended. However, when you submit an answer to Mastering Physics or a hard-copy assignment to your GSI, you are stating that the answer/solution is your own work and not copied from a book, website, friend, or other animate or inanimate source.
Cheating*:* A good lifetime strategy is always to act in such a way that no one would ever imagine that you would even consider cheating. Anyone caught cheating on an exam in this course will receive a failing grade on the relevant exam and will also be reported to the University Center for Student Conduct. In order to guarantee that you are not suspected of cheating, please keep your eyes on your own materials and do not converse with others during the exams. If you must look in a direction other than your exam paper, we recommend looking up at the ceiling. Never reach inside your backpack during an exam.
Plagiarism: To copy text or ideas from another source without appropriate reference is plagiarism and will result in a failing grade for your assignment and usually further disciplinary action. This includes copying homework solutions from printed or online, published or unpublished sources.
Academic Integrity and Ethics: Cheating on exams and plagiarism are two common examples of dishonest, unethical behavior. Honesty and integrity are of great importance in all facets of life. They help to build a sense of self-confidence, and are key to building trust within relationships, whether personal or professional. There is no tolerance for dishonesty in the academic world, for it undermines what we are dedicated to doing – furthering knowledge for

the benefit of humanity. There may be times when there is temptation to engage in some kind of cheating in order to improve a grade or otherwise advance your career. This could be as blatant as having someone else sit for you in an exam, or submitting a written assignment that has been copied from another source. And it could be as subtle as glancing at a fellow student's exam when you are unsure of an answer to a question and are looking for some confirmation. One might do any of these things and potentially not get caught. However, if you cheat, no matter how much you may have learned in this class, you have failed to learn perhaps the most important lesson of all.

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.

Exams & Reviews Information

MIDTERM 1

Review Session #1	Saturday, 2/23/17	12-2 PM	1 Pimentel
Review Session #2	Sunday, 2/24/17	12-2 PM	1 Pimentel
MIDTERM 1, LECTURE 2	Tuesday, 2/26/17	7-9 PM	155 Dwinelle
MIDTERM 1, LECTURE 3	Monday, 2/25/17	7-9 PM	145 Dwinelle and 10 Evans

MIDTERM 2

Review Session #1	Saturday, 3/30/17	12-2 PM	1 Pimentel
Review Session #2	Sunday, 3/31/17	12-2 PM	1 Pimentel
MIDTERM 2, LECTURE 2	Tuesday, 4/2/17	7-9 PM	155 Dwinelle
MIDTERM 2, LECTURE 3	Monday, 4/1/17	7-9 PM	155 Dwinelle

FIINAL

FINAL, LECTURE 2	Monday, 5/13/17	11:30-2:30 PM	1 Pimentel
FINAL, LECTURE 3	Tuesday, 5/14/17	8-11 AM	155 Dwinelle

Physics 7B Syllabus, Spring 2019
Lecture 2, N. Lowhorn

Week	Lectures	Topics	Reading	Labs
1	Jan. 22, 24	Intro to Thermal Physics, Temperature	17	---
2	Jan. 29, 31	Gases & Kinetic theory	18-19	---
3	Feb. 5, 7	Heat, Work, First law, Entropy	19-20	---
4	Feb. 12, 14	Engines, 2nd law; Electric Charge	20- 21	Heat engine
5	Feb. 19, 21	Electric force, Electric field, Electric dipoles	21	---
6	Feb. 26, 28	Electric flux, Gauss's law	22	---
7	Mar. 5, 7	Electric Potential, Capacitors	23-24	---
8	Mar. 12, 14	Capacitors, Dielectrics, Ohm's Law	24-25	Equipot. lines & E. field
9	Mar. 19, 21	Resistivity, AC power	25-26	---
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10	Apr. 2, 4	DC circuits, Magnetic force	26-27	---
11	Apr. 9, 11	Magnetic forces, Magnetic torques, Currents, Ampere's Law	27-28	DC circuits
12	Apr. 16, 18	Biot-Savart Law, Magnetic materials, Induced EMF	28-29	---
13	Apr. 23, 25	EMF and Faraday's Law	29	e/M lab
14	Apr. 30, May 2	Inductance, Inductors, DC circuits w/ inductors, and Maxwell Equations	30-31	O-scope & time dep.
15	*May 7, 9*	*Reading/Review/Recitation Week*	---	---
	May 13	*Final examination*	---	---

Midterm I: February 26, 7-9pm (Dwinelle 145 and Evans 10)
Midterm II: April 2, 7-9pm (Dwinelle 155)
Final Exam: May 13, 11:30am-2:30pm
Reading refers to chapters in our textbook. See next page for details.

Sections covered in D. C. Giancoli, *Physics for Scientists and Engineers*, Volume 2 (custom edition for the University of California, Berkeley), 4th edition:

17.1 – 17.9
18.1 – 18.7
19.1 – 19.10
20.1 – 20.9
21.1 – 21.11
22.1 – 22.4
23.1 – 23.8
24.1 – 24.6
25.1 – 25.9
26.1 – 26.7
27.1 – 27.9
28.1 – 28.10
29.1 – 29.7
30.1 – 30.5
31.1 – 31.3