Physics 7A
UC Berkeley PREP 2014
August 12-22

http://eecs.berkeley.edu/~zajdel/teaching/prep/prep2014.html

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Lecture Hours: From 8:30 to 10:00 am in 225 Bechtel
Discussion Hours: From 2:30 to 3:30 pm in 225 Bechtel
Study Hall Hours: From 7:45 to 10:00 pm in Unit 1 All Purpose Room

Course Information: Welcome to UC Berkeley! Congratulations on landing at one of the best places on earth to mature as engineers. You may not have had physics courses in high school, but will take the Physics 7 sequence to gain your essential foundation in the physical sciences. This intensive summer course is meant to give you a taste for college-level work, as well as help you develop some intuition about the topics you will cover in the first half of Physics 7A: Mechanics for Scientists and Engineers. Most importantly, you will begin to think about abstract mechanical concepts and apply them to real-world situations.

Learning Goals: By the end of this course, you should be able to...

- Explain the physical intuition behind forces in a variety of contexts
- Confidently apply theoretical concepts to solve classical mechanics problems

Even though a variety of topics will be covered, there is simply not enough time to offer exhaustive practice for all of them. Therefore, the main objective is to offer a *taste* for each idea and develop an intuition that will help you keep the big picture in view as you solve problems. Knowledge of memorized formulae will inevitably rot away with time; however, the concepts underpinning them should never be forgotten.

Topic Schedule: Each day of lecture will focus on one core idea in mechanics:

- Units and 1D Motion .................................. Lecture 1
- 2D motion ................................................. Lecture 2
- Newton’s laws ............................................. Lecture 3
- Circular motion .......................................... Lecture 4
- Gravitation ............................................... Lecture 5
- Work and Energy ......................................... Lecture 6
- Oscillations .............................................. Lecture 7

Text: No textbook is required. Lecture notes can be found online and are based on the text used in Physics 7A and 7B, *Physics for Scientists and Engineers*, 4th ed. by Douglas Giancoli.
Homework: Practice problems will be assigned after every lecture and will cover the day’s topic. There will be five graded assignments and one optional assignment. Homework is due at the beginning of the following day’s discussion section. Late work will not be accepted for credit. Collaboration on homework is encouraged, but all work turned in must reflect your personal understanding of the material.

Quizzes: There will be a 15-minute closed-book quiz at the beginning of every discussion section except the first, for a total of five quizzes. These quizzes cover the material from the previous day’s lecture and discussion section. A calculator and a one page front-and-back formula sheet are the only resources you may use.

Final Exam: There will be a two-hour comprehensive final exam on August 21, 2014 in 240 Bechtel at 1:30 pm. A calculator and a one page front-and-back formula sheet are the only resources you may use.

Grading: Assignments and examinations will be weighted as follows:

25% Homeworks (5% each)  
25% Quizzes (5% each)  
50% Final exam

Even though this course is not worth any credit, a letter grade will be assigned according to your performance with the following grading scale (numbers are given in overall percent):

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Academic Honesty: The UC Berkeley Student Honor Code consists of one sentence: “As a member of the UC Berkeley community, I act with honesty, integrity, and respect for others.” You are expected to abide by this policy. You can find more information at [http://www.asuc.org/honorcode/index.php](http://www.asuc.org/honorcode/index.php).

Extra Help: Please take advantage of the resources available to you and be engaged during lecture and discussion time. Do not hesitate to contact Tomo and me if you have any questions, since the course moves very quickly and builds on itself. This course will be difficult, especially if you have not taken physics before, but you’re surrounded by an amazing support network: your fellow students. Learn to work together to enhance your understanding of the material. If you strive to learn, to teach each other and yourselves, and you’ll have an excellent time here at Berkeley!