Physics 1120 Syllabus, Fa '06. Prof. Murray Holland and Steven Pollock

Lectures: MWF 10 A.M (Section 100) or 12 A.M (sect. 200) in Duane G-1B20
Recitations: Tuesdays in Duane basement rooms. (Rooms are moved to G2B77 and 75)
Murray's office: JILA S366 (the "other tower") Phone: (303) 492-4172
Steve's office: Duane F-419 (in the physics tower, fourth floor) Phone: (303) 492-2495
Office hrs: Murray: MWF after class behind stage + Help Room G2B87. See HelpRoom Page
Steve: See Help Room Page. **Or by app’t for both of us (just email!)**

Administrative office hrs: TBA, anytime by appointment, either professor.
Emails: Steven.Pollock@colorado.edu, or Murray.Holland@colorado.edu
Web page http://www.colorado.edu/physics/phys1120  *The online syllabus contains more than you will find here, and a great deal of essential course info is there too. Check it often!*

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<th>Phys1120 is the 2nd semester of intro physics. We emphasize conceptual understanding and problem solving skills. We cover electricity, circuits, magnetism, electromagnetic waves, light, and optics: the foundations of our modern technological society. Our goals are for you to continue developing knowledge and intuition about how the world works, to learn to approach, solve, and understand physics problems on both qualitative and quantitative levels, to relate classroom physics to the real world you live in, and to develop a deeper appreciation of the scientific method.</th>
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**Pre/co-requisites:** Calc II (MATH 2300/APPM 1360) must be taken at least in parallel. You should have a strong working knowledge of algebra, trig, Calc I, and Phys1110. Phys 1140 lab is recommended. Enthusiasm, curiosity, and an open mind will also be helpful!

**Required purchases:**
2) "Tutorials in Introductory Physics", McDermott. This 2-volume set is required for use in our recitations. (You must bring the tutorial book every Tuesday, you'll be working out of them!)
3) H-ITT "Clickers", available at the bookstore, will be used every lecture. (See web for details)

**Reading** is an essential part of 1120! Reading the text before class is very important. Lecture is to clarify your understanding, to help you make sense of the material. I will assume you have done the required readings in advance! We'll cover roughly one chapter/week, starting with Ch. 25.

**CAPA (Computer Assisted Physics Assignments)** Each student's assignment is slightly different - we'll distribute them in bins in the basement. *Work out the answers on paper before you log on to "hand in"/check your answers. CAPA gives instant feedback, and an opportunity to change wrong answers without penalty up to a limited max number of tries. New assignments appear online/in the basement weekly, due Friday night. (Technically Sat at 8 AM) Late hw’s will not be accepted by CAPA. Go to [http://capa.colorado.edu/](http://capa.colorado.edu/) (or link from our course home page)

**Etiquette:** Please turn off all cell phones and pagers when entering any classroom. Please do not throw vegetables at the instructor. It is perfectly OK to interrupt the lecture by yelling “Question!”. Questions in lecture are always good! **We encourage collaborative teamwork on homework and tutorials, an essential skill in science and engineering** (and highly valued by employers!) Social interactions are critical to scientists' success - most good ideas grow out of discussions with colleagues. As you study together, try to help your partners get over confusions, ask each other questions, critique hw and tutorial write-ups. **Teach each other.** You will learn a lot! Note: While collaboration is the rule in technical work, evaluations of individuals also play an important role. Exams will be done without help from others. For all assignments, the work you turn in must in the end be your own: in your own words, reflecting your own understanding.
**Recitations/tutorials:** This is a chance to work in a smaller setting with fellow students and trained teaching/learning assistants. Tutorials are carefully designed to enhance your understanding of key ideas dealt with in the class. You'll hand in tutorial homeworks, and work through worksheets in small groups at your own pace. It's more important for you to understand the material than to "cover" all the questions. You must take responsibility for your own learning! If you find yourself ahead of your partners, explain some physics to them. Explainers always learn more than listeners! Attendance at tutorials is mandatory. Remember to bring your workbook to tutorial every week.

**Pretests:** There will be a required "pretest" (online after Fri noon lecture, due by Tue 8AM). Every week, due before tutorial. You get full credit just for trying (your answer is not graded!)

**The help room:** You can meet TA staff in Duane G2B87 (enter through G2B90). We will try to keep it staffed 9 to 5 Monday through Friday. This is a great place to meet with other 1120 students to work together on homework and studying, and get some personalized assistance.

**Grading and exams:** Your course grade is determined by a combination of your performance on exams, CAPA and tutorial homework, in-class and online participation. (See web for more details.)

- **Exam 1:** 7:30-9:15 PM, Tu. Sep 19, 14% (Math 100/Muen E050: your room to be assigned later)
- **Exam 2:** 7:30-9:15 PM, Tu. Oct 17, 14%
- **Exam 3:** 7:30-9:15 PM, Tu. Nov 14, 14%
- **Final Exam:** 7:30 PM-10 PM, Tues Dec 19, location(s) to be announced, 21%

**CAPA homework** (submitted online): 15%.

**Tutorial homework** (handed in at recitations): 15%

**Tutorials:** Participation (pretests and attendance combined), 7%

**Clickers:** Most clicker questions are extra credit: they REDUCE total midterm weights by up to 10% of midterm total (i.e. 5% of your grade) See web page for more details on grading!

**Exams:** There are no makeups. You may not miss any exam except for reasons beyond your control, approved by Prof. Holland (usually a confirmed medical problem with written documentation.) In the unusual case of an (at most, single) excused absence from midterms, we use an average of your other exams.

You may bring a single sheet of 8.5 in. x 11 in. paper to exams, with your own handwritten notes. Calculators with scientific notation are allowed and sometimes needed. See web for more details.

**Disabilities:** Students with disabilities, including non-visible disabilities, please let us know early in the semester (first two weeks) so that your academic needs may be appropriately met. You'll need to provide documentation to Disability Services Office in Willard 322 (303-492-8671)

**CU deadlines:** Sep 6 is add date. Sep 8 is when we'd like to hear if you need accommodations. Sep 13 is drop date without our signatures. Oct 6 is the last day you can request accommodation for the final if you have 3 or more scheduled on Dec 19. Oct 11 is drop date with our signatures.

**How to succeed in this course:** Being "good" at physics comes with practice. CAPA problems often involve two steps: deciding which principles of physics apply, then determining the answer (which may involve calculations.) Tutorial homework concentrates even more on principles and concepts, and your ability to explain what you're doing. We encourage you to talk about physics with your friends. The thing to talk about is not which number to put where (the calculation is the easy part), but the reasoning that helps you decide what to do with the numbers. Please, get help early if you are struggling with any aspect of the course (from your TA/LA/Prof. Holland/Pollock//help room/study group/tutor...) We're here to help!

Any information in this syllabus is as accurate as is possible at the time of writing. Announcements about changes of any kind will be made in class, and (usually) posted on the web, and will take precedence over this syllabus. You are responsible for what is said in class, whether or not you are in attendance.
What we cover and why:

Most of the material we will cover this semester involves discoveries no more than 150 years old. (Of course, even the ancients knew some things about magnetism and light). We are so comfortable with technologies like television and computers, that it is easy to forget just how recent these developments are: some of you may have relatives old enough to remember the days before radio (the first licensed broadcast station opened in 1920). We live radically more convenient and perhaps longer and more enjoyable lives due to the revolution in electric-based technology. Modern health-care, industrial, and home tools are almost entirely based upon the existence of electrical power and electronic circuitry. This semester, we will cover the physics of electricity, magnetism, electronics, and optics. By the time we are finished, you should have a base of knowledge that will allow you to better understand how many modern electronic instruments work.

More tips for success:

The course topics that we will cover in Physics 1120 are among the greatest intellectual achievements of humans. Don’t be surprised if you have to think hard and work hard to master the material. You can perform very well in this class if you follow this time-tested system:

1. Read the chapter material before lecture and recitation. If you read it first, it’ll sink in faster during lecture.
2. Take notes on your reading and try to write down questions you may have. If you ask those questions in class, we'll will try to answer them.
3. Come to class. Stay involved in class and recitation. Come to office hours at the Physics Help Room.
4. Start the homework early. Give yourself the time to work and understand. Remember that it’s possible to have a perfect homework score by putting in the time and effort.
5. But first: Do the reading. Don’t try the homework until you finish the reading.
6. Work together. Physicists often work in groups. You need to do your own thinking, but talking to others is a great way to sort out your thoughts.
7. Don’t get behind. It’s very hard to catch up.
8. Don’t give up!