Physics 1010: The Physics of Everyday Life
Fall 2014

General Information

Instructor: Professor Kyle McElroy
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Teaching Assistant: Risa Wampler
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Prerequisites: Interest, Engagement, and willingness to do a wee bit of math. This course will use algebra frequently. We will also be working with graphs and scientific notation.

Course Materials (Required):

- Calculator: Bring this to class
- A Clicker for use in class, available in bookstore. We use i>clickers the CU standard.

Course Homepage with all course information:

http://www.colorado.edu/physics/phys1010/
Important Times and Dates:

**Lecture:** Tuesday and Thursday, 11-12:15, Duane G1B30

**Problem Solving Sessions:**
- **Location:** At back or behind the Physics Help Room.
  - Tuesdays, 3-5 PM (tentatively pending class choice)
  - Wednesday, 2-4 PM (tentatively pending class choice)

**Office Hours:**
- Kyle McElroy: Problem Solving Session and additional Help Room Hours.
  - Monday 10a -11:00 am in Duane F619
  - Also by appointment or email.
- Risa Wampler: See Help Room Hours.

**Hour Exams:** We will have 3 midterms in the evening on the following dates: **9/18, 10/16 and 11/13** from 7:30pm-8:50pm. Lowest midterm score will be dropped.

- **Location:** HUMN 1B50

**Final:** Final Exam is Tues, Dec 16, 4:30-7p. If you have three final exams that day, the deadline for making arrangements for rescheduling is Oct 10
Useful websites / resources:

There is a computer lab available in Duane G116 M-F 8AM - 5:30 PM (next to the old Math/Physics Library). You will need the Student ID key you received during orientation in order to make use of this lab. Computers are also available in physics help room and problem solving sessions.

- http://www.colorado.edu/physics/phys1010/ has all the important course information.
- http://phet.colorado.edu/ has many of the interactive applets used in class
- http://rabi.phys.virginia.edu/HTW/ has many questions and answers by Bloomfield about the physics of how things work.
- http://www.colorado.edu/physics/2000/index.pl has interactive material on electromagnetic waves and various other topics.

Goals and Principles (how to succeed)

Overall Course Goals:

1. To see how much of everyday life is governed by physics principles.
2. To understand that the universe is predictable rather than incomprehensible.
3. To appreciate how scientific understanding (particularly physics) is based on careful experiments.
4. To learn to think logically in order to solve problems.

Guiding principles:

1. People understand concepts better by seeing them in action and thinking about them than by hearing them explained.
2. Understanding physics (and solving problems that test that understanding) is a learned skill, like cooking, or playing basketball or the violin. It takes time, effort, and practice.
3. People learn best by thinking about topics and discussing them with others.
4. Students learn most when they take the responsibility for what is learned.

In keeping with these principles, there will be a substantial number of homework problems each week. You will have considerable difficulty completing them if you follow non-expert problem solving approaches and/or you work alone. However, if you work with other students and develop an “expert” approach to problem solving, the homework problems should take you less time and effort, and you will learn a lot from doing them. Although you are encouraged to work out the solutions to problems together with other students, you are required to write up the answers in your own words. So each student’s wording should be unique. Typically you will need to spend between four and six hours outside of class to master the material.
There will be a number of things done to help you develop good problem solving skills. Many of the problems will be designed to help you learn good techniques, and, there will be several problem-solving sessions Mondays and Tuesdays where you will be able to conveniently get together with other students to work on homework. Members of the learning team will be present at these sessions to provide “coaching” on problem solving methods. You are encouraged to come to these to work with other students and get coaching in problem solving as necessary. The times and room numbers are listed above. There are a variety of guides to help with general problem solving strategies, one of which is available here for you to consider. The physics help room is also open 40 hours per week, and there are always students and TAs there, although they are not necessarily from 1010.

Although the problems may be challenging at first, as your problem solving skills develop over the term, you will find the problems easier, and they will take less time to solve.

Students begin this class with a wide range of backgrounds in physics and math. As a result, it is impossible for each class to be perfectly matched to everyone’s background. The primary purpose of office hours is to provide individual help to students that need it. We are anxious to provide whatever help is necessary for every student, regardless of background, to do well in the course and achieve all of the learning goals. However, it is your responsibility to recognize that you need that help, and to take advantage of its availability by asking to meet with the instructional team individually.

1010 Specific Learning Goals:

In a separate link, you will find a list of very specific items you are to learn during the first 3 weeks of this course. A full list of learning goals will be available on the course webpage after we find out from you what you are most interested in learning about! These learning goals will be made available within each section of the course both in the daily notes and for each broad section of the course (between the midterms). These will give you a very clear idea of what material will be covered in the course, on the homework problems, in the labs, and on the exams.
GRADES:

- Grading philosophy: the amount you will learn depends on how much thought and practice you put in distributed sensibly over the term. Everyone who makes an honest attempt to do all the assigned work on time will pass, normally with a grade of A or B.
- Your grade in the course will be determined from your total number of points earned per section (hw, exams, etc). The general point breakdown is as follows. Additional information is provided below.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Approx. Points per Assignment</th>
<th>Number of Assignments (approx)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inclass participation (clickers)</td>
<td>2-4 pts / class</td>
<td>~ 25 (5 dropped)</td>
</tr>
<tr>
<td>Inclass reading quiz</td>
<td>2 pts</td>
<td>~10 (1 dropped)</td>
</tr>
<tr>
<td>Homework</td>
<td>~20</td>
<td>12 (lowest dropped)</td>
</tr>
<tr>
<td>Midterm</td>
<td>40</td>
<td>3 (lowest dropped)</td>
</tr>
<tr>
<td>Final</td>
<td>80</td>
<td>1</td>
</tr>
</tbody>
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Total Possible Point (Roughly!): 450

Letter grades will be assigned to your point total according to combination of absolute scale and modified curve. To pass the course you must receive at least half of the total number of points possible to be earned. **With this system, the most important requirement for getting a good grade is to do all the assignments!** Missing several weeks of class and homework will likely put you in danger of failing, no matter how well you do on the exams! Your lowest weekly homework score, one reading quiz, and your 5 lowest in-class scores will be thrown out, so you can miss one week’s homework and one quiz or forget your clicker 5 times without penalty. There are three mid-terms, your highest two will count. You are encouraged to take all these exam (for feedback), but the one dropped midterm (and dropped inclass/hw) will cover illness, car trouble, forgotten clickers, participation in athletic events, etc. The final is mandatory.

There will be no other corrections made to grades other than for **major** medical or personal catastrophes, those items that are documented and beyond your control. So don’t bother asking. Also, don’t waste your homework or class exemptions, because you may need them later if you get sick, forget your clicker, or other reasons.

Some weeks there will be a survey about how class is going and what you wish to cover. These will count as extra-credit towards your homework scores.

(The exams count for a relatively small amount in your grade, but we reserve the right to adjust the grades for special cases whose exam scores are a great deal lower than their homework grades.)
Weekly checklist for best learning (and grade):

1) Was there reading due this week? Did I do it?
2) Did I come to class and bring my clicker?
3) Did I submit my homework online by the deadline?
4) Is there an evening exam this week?
5) Did I turn in extra credit question or comment with the homework

More details on how points are earned in the class:

1. Homework:
   - New Homework Assignments will be posted on the course webpage every Friday by noon
   - Each Homework will be worth ~20 pts.
   - Homework is due the following Thursday by 8pm (subject to class discussion). Homework is submitted by filling out the online form and submitting. You login to your workspace and click the homework link for that week. Then you fill out the form and save. Your submission saves all your inputs. If you want to change an answer or add more answers to your homework, you can reload your saved homework simply by returning to your learning workspace and clicking again on the homework link. Changes may be made up until the homework deadline (Tues at midnight). **DO NOT FORGET TO HIT SUBMIT** before the deadline. After this time, the computer will no longer accept submissions
   - **We encourage you to work together on the homework problems, but you must write up the answers in your own words.** There will be 2 Problem Solving Sessions each week. The dates and times for these will be posted to the website after they are decided. This is a great opportunity to come work on the homework with your classmates!
   - The grades on homework will typically be very high, so failing to turn in more than one assignment, and thereby getting a 0 will have a big impact on your grade. Talk to your instructor, NOW, if you will have a scheduling problem during the term so that you will be unable to complete any of the assignments. Permission for exceptions from the normal class work schedule must be requested in advance.
   - It is best if you print out the assignment on Wed afternoon or Thurs morning, so you see the problems before class.
   - Homework solutions may be accessed through the Physics 1010 D2L Page, a secure form. The answers and solutions will normally be available at noon on the Tuesday.
   - Grading of the homeworks will be done by the TAs.

2. In-class questions and quizzes on reading:
   - **Clickers:** You will need to buy personal response systems (usually referred to as “clickers”) from the bookstore for answering questions in class.
   - **Reading Quizzes:** After each reading assignment there will be a very short quiz covering the material in class worth 2 points.
   - **In-class clicker questions:** During class there will be many questions on which you enter your response using clickers. Your answers will be recorded and you will receive 2 points per class for submitting any answer to all of the questions, whether or not your answers are correct. There will be a few questions, typically 0 to 2 per classes, for which you will receive one point if you have the correct answer, and 0 if incorrect. Graded questions will usually be late in the class and ones that nearly all students get correct if they have been paying attention.
3. Hour exams / MidTerms:

- Hour exams will be given in the evenings on **9/18, 10/16 and 11/13** from 7:30pm-8:50pm in HUMN:
  - Each exam is worth 40 points.
- There will be no early or late exams given and no make-up exams.
- **Be sure to bring formula card(s) and calculator.** All exams will be closed book. You may make up a single 3 x 5 formula card for each exam and bring your previous cards with you to subsequent exams so you will have one card for first exam, two for the second and four for the final. You can write anything you want on your formula card, but you must write it by hand - no photocopying or printing allowed. You should bring a calculator to class and exam. Sharing of calculators during exams and quizzes will not be allowed.
- There are no makeup exams.
- **All students will have their lowest mid-term score dropped.** This is to cover unexpected circumstances, forced travel, account for medical, family emergencies, personal commitments or your own choice. **There will be no makeups and it is NOT possible for you to miss 2 exams.** This policy is only for the one hour exams. The final is mandatory.
- Exam grades and solutions will be posted after the exam on the course D2L website.

5. Final exam:

   The final examination will be on Tues Dec 16, 4:30 PM. If you have three final exams that day, the deadline for making arrangements for rescheduling is Friday, Oct 10.
   The final is worth 80 points and will be cumulative.

6. Extra Credit Points:

   Often you will have the opportunity to receive up to one point per week of extra credit by sending in a question or comment using the online submission for found on the course website. Instructions will be posted on the website and announcements made in class.
**General rules:**

The rules in this list may seem rather harsh and arbitrary, but they are essential to maintaining the integrity of the course. There is a painful story behind every one of them. Although most of you will never come up against any of the rules, there are a handful of students each semester that just cannot seem to avoid them. These rules are primarily to prevent these students from obtaining an unfair advantage over the others in the class. If these rules are going to cramp your style, then this class is probably not for you.

1. Only one week excused / 1 homework drop will be provided unless there are significant reasons, documented and preferably addressed in advance.

2. There will be no extra credit work other than the options listed above.

3. No student will fail who makes a serious effort at all the assigned work. If you miss a few homework assignments, in-class questions, or miss more than one exam, it becomes possible for you to fail the course.

4. Although you are encouraged to work together with other students, you must hand in your own work and put the explanation in your own words. Handing in a copy of another student’s work is considered cheating. **We will fail any student who submits for a grade work (any work, including: homeworks, exams and papers) that is not his/her own. We will fail any student who permits another student to turn in his/her own work.** If you have a question about this, please see the [University Honor Code](https://example.edu/academic_honor/code), especially the [pledge](https://example.edu/academic_honor/pledge).

5. Our instructional team is here to support you. Please approach us to discuss questions or concerns you have...
**Students with Disabilities:**
If you qualify for accommodations because of a disability, please submit to your professor a letter from Disability Services in a timely manner (for exam accommodations provide your letter at least one week prior to the exam) so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities. Contact Disability Services at 303-492-8671 or by e-mail at dsinfo@colorado.edu. More at http://www.Colorado.EDU/disabilityservices

If you have a temporary medical condition or injury, see Temporary Medical Conditions: Injuries, Surgeries, and Illnesses guidelines under Quick Links at Disability Services website and discuss your needs with your professor. http://www.colorado.edu/disabilityservices/go.cgi?select=temporary.html

**Religious Obligations – Conflicts with Scheduled Exams, Assignments or Class Attendance:**
We will make every effort to accommodate all students who, because of religious obligations, have conflicts with scheduled exams, assignments, or other required attendance, provided you notify me at least two weeks in advance of the scheduled conflict. The campus policy can be viewed at http://www.colorado.edu/policies/fac_relig.html

**Student Classroom and Course-Related Behavior:** As a result of extensive discussions with and recommendations from faculty and students, a new classroom behavior policy and associated new procedures have been adopted. You may view this information at http://www.colorado.edu/policies/classbehavior.html

The University of Colorado Boulder (CU-Boulder) is committed to maintaining a positive learning, working, and living environment. Students and faculty each have responsibility for maintaining an appropriate learning environment. Students who fail to adhere to behavioral standards may be subject to discipline. Faculty have the professional responsibility to treat students with understanding, dignity and respect, to guide classroom discussion and to set reasonable limits on the manner in which students express opinions. Disruptive students in the academic setting hinder the educational process, and will be removed from class.

The University of Colorado does not discriminate on the basis of race, color, national origin, sex, age, disability, creed, religion, sexual orientation, or veteran status in admission and access to, and treatment and employment in, its educational programs and activities. (Regent Law, Article 10, amended 11/8/2001). CU-Boulder will not tolerate acts of discrimination or harassment based upon Protected Classes or related retaliation against or by any employee or student. For purposes of this CU-Boulder policy, "Protected Classes" refers to race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, or veteran status. Individuals who believe they have been discriminated against should contact the Office of Discrimination and Harassment (ODH) at 303-492-2127 or the Office of Student Conduct (OSC) at 303-492-5550. Information about the ODH, the above referenced policies, and the campus resources available to assist individuals regarding discrimination or harassment can be obtained at http://www.colorado.edu/odh

**Honor Code:** The purpose of an Honor Code at the University of Colorado at Boulder is to secure an environment where academic integrity, and the resulting behavior, can flourish. The Honor Code recognizes the importance of honesty, trust, fairness, respect, and responsibility and wishes these principles to be a defining part of the CU-Boulder campus. The Honor Code allows all students to have responsibility for, and the ability to attain, appropriate recognition for their academic and personal achievements. You can view the honor code information at http://www.colorado.edu/academics/honorcode/