Course Syllabus

Welcome to PHYS 2020 — General Physics II! This is the second semester of an algebra-based introduction to physics primarily intended for students in the biological sciences (we also offer a more rigorous calculus-based sequence PHYS 1110/1120 for engineering and physics majors).

Objectives  This course builds on PHYS 2010 in which you learned to analyze physical systems using two paradigms: (1) Newton’s laws, and (2) conservation laws. In PHYS 2020 you will apply these paradigms to the electric and magnetic forces. You will be able to explain the effects of these forces qualitatively. You will be able to perform calculations resulting in predictions. In the later part of the term, you will apply what you’ve learned about these forces to interpret phenomena related to light!

Lectures  All students in PHYS 2020 attend the same lectures (section 200).

M-F 9:15–10:50 am  DUAN G1B30

Labs  Each student is enrolled in one of two sections (211 or 221). Each section meets three times a week: Tu, We, and Th. For the time and location of your lab section, see myCUinfo. You must attend the section you registered for.

Instructor  Dr. Daniel R. Bolton

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E-mail:  daniel.bolton@colorado.edu
Office hours:  Mon 11–12, Wed 11–12, and Thu 2–3
Office hours are held in the helproom (DUAN G2B87)
I am also available to meet one-on-one (by appointment)

Materials  Required:

- College Physics, by Urone and Hinrichs, available for free on openstaks.org
- Access to the online homework system FlipItPhysics
- An iClicker that is registered on D2L

Grading  The following breakdown will be used to calculate your overall percentage.

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular Exams (3)</td>
<td>3 × 12 = 36%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>24%</td>
</tr>
<tr>
<td>Lab/Recitation</td>
<td>10%</td>
</tr>
<tr>
<td>FlipItPhysics</td>
<td>15%</td>
</tr>
<tr>
<td>Written homework</td>
<td>15%</td>
</tr>
<tr>
<td>Prelectures/Checkpoints</td>
<td>up to 1.5%</td>
</tr>
<tr>
<td>Clickers (extra credit)</td>
<td>up to 1.5%</td>
</tr>
</tbody>
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Your final letter grade will be assigned according to:

Reading

Every lecture covers a portion of the OpenStax textbook as specified on the course calendar. It is essential that you read the textbook before coming to class. For most students, this is the primary key to success in PHYS 2020. As you read the book, try not to simply memorize, but rather to deeply understand the material. Reproduce the derivations on your own scratch paper and work through example problems in detail. Come to class with a plan for the topics you need to understand more deeply.

Exams

There will be three regular exams during the term along with a comprehensive final exam. Each student is enrolled in one of the following Friday afternoon sections: 210 or 220. These sections meet at the same time and the same location – this time is for the exams. There is no exam on the first Friday. All exams will count toward your final grade. The exam schedule is:

- **Exam 1**: Friday, July 15 2:30–4:30 pm Duane G1B20
- **Exam 2**: Friday, July 22 2:30–4:30 pm Duane G1B20
- **Exam 3**: Friday, July 29 2:30–4:30 pm Duane G1B20
- **Final Exam**: Friday, August 5 TBD TBD

All exams will be multiple choice with no partial credit. Calculators and one sheet (front and back) of handwritten notes are allowed, but cell phones and textbooks are not. If you have an emergency that makes it impossible for you to take an exam during the scheduled exam period, please contact me. At my discretion (and only in special cases that warrant it), one of the regular exams can be excused and replaced with the average of your other two regular exam scores. No make-up exams will be given in any circumstance. If you miss two exams, or if you miss the final exam, even for a valid reason, you will not be able to pass the course. Students with a documented disability will be given extra time on exams and will take the exam in an alternative room. Please contact me if you are requesting this accommodation.

Lab and Recitation

There are separate lab sections in addition to lecture. Each student is enrolled in one of the following sections: 211 or 221. Each of these sections meets on Tu, We, and Th. Some days you will do a lab and some days you will do a recitation (see the course schedule on D2L for details). See myCUinfo for your section’s time and location. You must attend the section in which you are enrolled.

The written material for labs and recitations will be posted on D2L and you are required to print it out and bring it with you to lab. Some labs have a short pre-lab assignment that must be completed before the start of your section. Pre-lab assignments, when they exist, count as 1/3 of the corresponding lab. If you miss more than one lab, you will not be able to pass the course. Times are available to make up a lab if you have a valid excuse for missing a lab. I will drop your lowest lab/recitation score when I compute your final grade.
FlipItPhysics

Create an account at [http://www.flipitphysics.com](http://www.flipitphysics.com) using the Course access key: “2020Su16” (no quotes). Periodic homework assignments are due (see the course schedule for details) in the evenings at 11:59 pm. These assignments count for 15% of your course grade. I will drop your lowest homework score when I compute your final grade. Periodic prelecture video assignments are due (see the course schedule for details) in the evenings at 11:59 pm. Periodic checkpoint assignments (see the course schedule for details) are due before class at 9:14 am. Prelecture videos and checkpoint assignments together will count for up to 1.5% extra credit in your final class average. Answers will be available immediately after assignments are due, so late assignments will not be accepted under any circumstances and there are no exceptions to this rule. For the same reason, no grace will be given for lost internet connections or malfunctioning computers, so plan to complete your assignments early! **You are encouraged to work together on homework, but in the end, you are responsible for generating your own solutions and understanding.**

Written Homework

In addition to FlipItPhysics, there are longer, more in-depth homeworks due as specified on the course schedule. These assignments, which you print out off D2L and then fill in the answers, are due at 5 pm to the cabinet at the entrance to the helproom G2B87. These assignments will be hand-graded by your TA and returned to you in lab/recitation. **You are encouraged to work together on homework, but in the end, you are responsible for generating your own solutions and understanding.**

Attendance & Participation

Class attendance is very important. If you miss a class, you are responsible for understanding the material you missed; I encourage you to ask a trustworthy classmate for help. You are expected to read the textbook sections indicated on the course schedule before coming to class. If you complete the reading, you will be able to maximize the effectiveness of attendance!

Multiple choice “clicker questions” will be asked in every class period and you will respond using your iClicker. You may not share an iClicker with another student. See [http://www.colorado.edu/oit/tutorial/cuclickers-iclicker-remote-registration](http://www.colorado.edu/oit/tutorial/cuclickers-iclicker-remote-registration) to register your iClicker on D2L. Each question will be worth 2 points: 1 point for participation and 1 point for getting the correct answer. Your clicker average will count toward up to 1.5% extra credit in your final class average. Clicker questions start counting on Thursday of the first week of class, and I will drop your three lowest scoring days of the semester. Because of this policy, I will not be accepting excuses for missing class; a missed class simply counts as one of your three lowest scoring days.

The Helproom

The TAs and I will all hold regular office hours in the physics helproom, DUAN G2B87. The helproom is open M–F from 9–5. To learn when a particular person will be staffing the helproom, visit [http://capa.colorado.edu/cgi-bin/HelpRoom](http://capa.colorado.edu/cgi-bin/HelpRoom), however, you can come at any time, write your name on the board, and receive help.
Keys to Success

Reasons for taking this course are wide ranging. Take the time to think through why you are here. If you are a science major, the concepts covered in this course will form the foundation for many of the things you will learn in your other science courses. If you are planning on medical school, this course will help sharpen your critical thinking skills. I believe that no matter what you plan on doing with your life, this class can help you get there. If you believe that succeeding in this course is worthwhile, it will be much easier to put in the necessary hard work.

The material in this class may be challenging to you, even if you took physics in high school. For most students, attending class and completing the homework won’t be enough; you’ll also need to spend significant time each day reading and studying the material. Aim for mastery of the concepts – you only understand something fully when you can explain it to someone else. Don’t trick yourself into thinking that you understand a problem after simply watching an expert solve it. Physics is not a spectator sport!

Probably the most important key to success in this course is reading the textbook. Read it early and often. Read it by yourself in an environment free from distraction, with a pen and paper hand to take notes and try out example problems. I am also available by email, by appointment, and for drop-in visits if you see me free. I am not too busy to help you. I enjoy helping you. Come get help if you want it!

Disclaimer: this syllabus is accurate at the time of writing. Announcements about changes made in class and posted on D2L take precedence over this syllabus. You are responsible for what is said in class, whether or not you are in attendance.

And now, the fine print (as dictated by CU):

Accommodation For 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. If you have a temporary medical condition or injury, see Temporary Injuries guidelines under the Quick Links at the Disability Services website and discuss your needs with your professor.

Religious Holidays
Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, I will handle these requests exactly as I do emergencies (as described in the Exams section above). See campus policy regarding religious observances for full details.

Classroom Behavior
Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, color, culture, religion, creed, politics, veterans status, sexual orientation, gender, gender identity and gender expression, age, disability, and nationalities. Class rosters are provided to the instructor with the student’s legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. For more information, see the policies on classroom behavior and
Discrimination and Harassment

The University of Colorado Boulder (CU-Boulder) is committed to maintaining a positive learning, working, and living environment. CU-Boulder will not tolerate acts of sexual misconduct, discrimination, harassment or related retaliation against or by any employee or student. CU’s Sexual Misconduct Policy prohibits sexual assault, sexual exploitation, sexual harassment, intimate partner abuse (dating or domestic violence), stalking or related retaliation. CU-Boulder’s Discrimination and Harassment Policy prohibits discrimination, harassment or related retaliation based on race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. Individuals who believe they have been subject to misconduct under either policy should contact the Office of Institutional Equity and Compliance (OIEC) at 303-492-2127. Information about the OIEC, the above referenced policies, and the campus resources available to assist individuals regarding sexual misconduct, discrimination, harassment or related retaliation can be found at the OIEC website.

Honor Code

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the academic integrity policy of the institution. Violations of the policy may include: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access, clicker fraud, resubmission, and aiding academic dishonesty. All incidents of academic misconduct will be reported to the Honor Code Council (honor@colorado.edu; 303-735-2273). Students who are found responsible of violating the academic integrity policy will be subject to nonacademic sanctions from the Honor Code Council as well as academic sanctions from the faculty member. Additional information regarding the academic integrity policy can be found at http://honorcode.colorado.edu