Course Syllabus

Welcome to **PHYS 1120** — **General Physics II**! This is the second semester of a calculusbased introduction to physics primarily intended for science and engineering majors, and others desiring a rigorous introduction to physics (we also offer an algebra-based sequence PHYS 2010/2020). There is no lab in PHYS 1120; instead, you are enrolled in a recitation that meets once a week. We call these recitations "tutorials".

Objectives At the end of this course you should be able to:

- Analyze interactions of charged objects, electric currents, and magnetic materials using Coulomb's Law and the Biot-Savart Law.
- Differentiate between force, field, and potential.
- Apply Gauss's Law, Ampere's Law, and Faraday's Law to symmetric charge and current distributions.
- Evaluate basic circuit designs.
- Explain electromagnetic induction phenomena.
- Describe basic facts about electromagnetic waves.

Lectures	MWF 11:00 – 11:50 am	DUAN G1B20	Bolton
	MWF 1:00 – 1:50 pm	DUAN G1B30	Regal
	MWF 3:00 – 3:50 pm	DUAN G1B30	Bolton

Tutorials Weekly recitation sections (Tutorials) meet on Tuesday in G2B60, G2B63, or G2B64. You must attend the section you registered for.

Faculty Dr. Daniel Bolton

Office:	DUAN F1033 (10th floor of Gamow tower)
Phone:	(303) 492–7368
Email:	daniel.bolton@colorado.edu
Office hours:	Tu 2:00–4:00 and W 12:00-1:00 in the helproom (DUAN G2B90)
	Also available one-on-one in my office (by appointment).

Prof. Cindy Regal

Office:	JILA A407
Phone:	(303) 492–5956
Email:	regal@colorado.edu
Office hours:	M 2:00–3:00, W 9:00–10:00 in the helproom (DUAN G2B90)
	Also available one-on-one in my office (by appointment).

Logistics Prof. Ed Kinney

Office:	DUAN F227 (in tower across from buffalo statue)
Phone:	(303) 492–0455
Email:	edward.kinney@colorado.edu
Office hours:	M 12:00–1:00, Tu 1:00–2:00 in the helproom (DUAN G2B90)

Materials Required:

- Essential University Physics, Vol. 2, 3rd edition, by Wolfson
- *Tutorials in Introductory Physics*, Custom CU edition, by McDermott and Shaffer
- Access to the online homework system MasteringPhysics
- Access to the online prelecture videos on *FlipItPhysics*
- An iClicker that is registered on myCUinfo

Note: The bookstore is selling a bundle including the tutorial books and an access code for *MasteringPhysics* that comes with online access to the textbook. This is the cheapest way to obtain all required materials.

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

Regular Exams (3):	$3 \times 15 = 45\%$
Final Exam:	25%
Tutorials:	15%
MasteringPhysics:	12%
FlipItPhysics:	3%
Clickers (extra credit):	up to 2%

Your final letter grade will be assigned according to:

90 - 100 A/A- 80 - 90 B+/B/B- 69 - 80 C+/C/C- 55 - 69 D+/D/D- 0 - 55 F

Exams There will be three regular exams during the semester along with a comprehensive final exam. All exams will count toward your final grade. The exam schedule is:

Exam 1:	Thursday, Sept. 20	7:30–9:15 pm
Exam 2:	Thursday, Oct. 18	7:30–9:15 pm
Exam 3:	Thursday, Nov. 15	7:30–9:15 pm
Final Exam:	Wednesday, Dec. 19	10:30 am – 1:00 pm

All exams will be multiple choice. Calculators and one sheet (front and back) of handwritten notes are allowed, but cell phones, wireless devices, 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 Prof. Kinney. With official documentation (and at our discretion) 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. Students with a documented disability will be given extra time on exams and will take the exam in an alternative room. Please contact Prof. Kinney if you are requesting this accommodation. **Tutorials** Each week you will attend a recitation section called a "Tutorial". You will work in small groups to answer conceptual questions about class material. Each section is lead by one teaching assistant (TA, a graduate student) and one learning assistant (LA, an undergraduate). Tutorials are *active learning* environments in which the staff is instructed to be a "guide on the side" rather than a "sage on the stage". You will not be told how to solve problems, but will rather work with your peers to discover ideas and techniques on your own. We use this curriculum because there is clear data indicating students learn more in the Tutorials than in more traditional recitations.

Your TA will take attendance and you are required to attend the Tutorial section you are registered for. Tutorial attendance and homework (together) are worth 15% of your course grade. Your lowest Tutorial homework score will be dropped at the end of the semester. You are encouraged to work together on homework, but in the end, you are responsible for generating your own solutions and understanding.

- **Mastering** Register for MasteringPhysics by following the link on our Canvas home page. Weekly online homework assignments are due on Wednesday evenings at 11:59 pm. Your MP average counts for 12% of your course grade. We will drop your lowest homework score at the end of the semester. Some assignments may have extra credit questions, but your MP average will be capped at 102%. Solutions will be posted on Canvas the morning after the assignment is due. MP will gradually take away credit after the deadline (20% per hour). No grace will be given for lost internet connections or malfunctioning computers, so plan to complete your assignments early!
- **FlipItPhysics** Create an account at http://www.flipitphysics.com using the Course access key: "PHYS1120FA18" (no quotes). Prelecture video assignments and corresponding Checkpoint questions are due at 11:59 pm on the night before a lecture on various days throughout the semester (see the calendar on flipit-physics.com or on Canvas). Your FlipIt average counts for 3% of your course grade. We will drop one missed FlipIt at the end of the semester. FlipIt will gradually take away credit after the deadline (20% per hour). No grace will be given for lost internet connections or malfunctioning computers, so plan to complete them early!
- **Clickers** Class attendance is very important. If you miss a class, you are responsible for understanding the material you missed; we encourage you to ask a trustworthy classmate for help. Video lecture capture is available (see link on Canvas). You are expected to read the textbook sections indicated on the schedule on Canvas *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, even if they are in a different section. See

 $http://www.colorado.edu/oit/tutorial/cuclickers-iclicker-remote-registration \ to$

register your clicker on myCUinfo. 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 2% extra credit in your final class average. You must attend the lecture section you are registered for in order to receive clicker points. Clicker questions start counting the second week of class, and we will drop your three lowest scoring days of the semester. Because of this policy, we 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, LAs, Dr. Bolton, Prof. Regal, and Prof. Kinney will all hold regular office hours in the physics helproom, DUAN G2B90. 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; 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 an engineering major, the concepts covered in this course will form the foundation for many of the things you will learn in your engineering courses. If you are planning on medical school, this course will help sharpen your critical thinking skills. We 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 week 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. We are also available by email, by appointment, and for drop-in visits if you see me free. We are not too busy to help you. We 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 Canvas take precedence over this syllabus. You are responsible for what is said in class, whether or not you are in attendance.

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 guide-lines 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 the student code.

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. CUs Sexual Misconduct Policy prohibits sexual assault, sexual exploitation, sexual harassment, intimate partner abuse (dating or domestic violence), stalking or related retaliation. CU-Boulders 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