



Syllabus V 1.3
PHY 2054C Section 0002
Physics 2, Spring 2013
Monday, Wednesday, Friday 2:30 - 3:20 PM, MAP 260

Professor: Dr. Josh Colwell
Office: Physical Sciences 434
Contact info: E-mail: jec@ucf.edu (this is by far the easiest way to contact me.)
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AIM ID (AIM, ichat, etc): colwellastronomy
In person office hours: Tuesday 11:00 a.m. - 12:00 p.m., Wednesday 9:00 - 10:30 a.m., Friday 3:30-4:20 p.m.

Website: Homework assignments will be completed on MasteringPhysics.com. Class notes, grades, and announcements will be made on Webcourses2 (accessible from myUCF).

Textbooks:

- *College Physics* (2nd edition), by Knight, Jones and Field, **and** Physics 2054 Lab Manual. The UCF Bookstore carries a customized “Volume II” of this book for our course. This includes the access code to the masteringphysics.com website for homework. We will be covering chapters 17-28, with some exceptions.
- *i>clicker-2*: We will be using the *i>clicker* feedback system in class every day. Please get the correct clicker for our section as there is more than one type of clicker used on campus. You may get one secondhand, and you should be able to sell your used *i>clicker* at the end of the semester if you do not need it for future courses. The original *i>clicker* is being replaced by the *i>clicker2*. Both are shown at right. If you are buying a new clicker, get the *i>clicker2*. There is a discount coupon in the textbook sold at the UCF bookstore for the *i>clicker2*. If you already have an *i>clicker*, do not buy a new one without consulting with me. Register your clicker at www.iclicker.com/registration.



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Be sure to enter your **NID** in the Student ID field on the web site, **including the two leading letters**.

Assignments and Grading:

Your final grade will be based on the following:

Three in-class exams (**three highest of four exams**): 39% (13% each)

Final exam (cumulative): 24%

Laboratory and in-lab exercises: 15%

Homework: 12%

Clicker questions: 10%

There will be four in-class exams during the semester, and a cumulative final exam. The lowest of the regular mid-terms will be dropped. If you miss an exam for **any** reason (excused or not), that will be your dropped exam. Therefore, you should plan to make your best effort on all mid-terms. One homework assignment will be dropped to handle the case where you cannot turn in an assignment for **any** reason (excused or not). Your three lowest clicker day scores will be dropped to handle unavoidable absences. Note that everything done in your laboratory sections counts for 15% of your overall course grade. The lab exercises will also help you do better on your exams. All assignment and exam grades are final 72 hours after they have been returned. Contact me before this 72-hour period is over if you have a grading dispute. See the rest of the missed work policy below. Plus and minus grades (A-, B+, etc.) will **NOT** be given. The default letter grade scale will be:

A: 88-100 B: 75-88 C: 60-75 D: 50-60 F: below 50

This grade scale may be adjusted downward (i.e. “curved”) for individual exams at the instructor’s discretion.

Course Description and Requirements: PHY2054C is the second part of the two-semester sequence in introductory physics offered primarily for students majoring in information technology, the biological sciences and pre-health professions. Emphasis is placed on understanding major principles and concepts, and Algebra with simple Trigonometry is used to clarify them. Students should have a good working knowledge of Algebra and Trigonometry at the level of MAC1104 and MAC1114 or equivalent.

Information about this course (syllabus, class-notes, etc.) will be available on Webcourses (via myUCF). In addition, I will use your official UCF e-mail to send you announcements from time to time, so be sure to check your e-mail daily. The website will be frequently updated as the course progresses itself.

This is a fast-paced course. The content of this course is selected to match nation-wide standards for Physics courses, which are often used to prepare students for careers in Medicine and Life Sciences. During the course we will typically work through roughly one chapter per week. Your primary sources of information for the new concepts are your instructor, the textbook and your

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class notes. The syllabus shows which sections you need to read for each day of class. Here is an estimate of the effort needed for 2054C:

- Reading 20-30 pages of text each week – 3 hours.
- Web based homework & time studying concepts – 5 hours
- Laboratory – 3 hours
- Classroom time – 3 hours
- Estimated weekly effort – 14 hours

You can see that you need to plan on having enough time to do your best in this class.

It is extremely important NOT to get behind! Physics builds on itself inexorably, and once you are behind it will be very difficult to catch up with it again. And don't assume that because you read a section, you understand it. Until you can consistently do the problems successfully, you don't understand the material.

Course Objectives, Or, Why Am I Learning About Magnetic Fields?

Aside from the practical matter that UCF is presumably requiring you to take this course to get your degree, there is actually some value to you in learning the material! Physics is, in many ways, a much simpler scientific discipline than ones you may be majoring in. For that reason, it allows us to easily see fundamental principles, such as conservation of energy. It is an excellent test case for the scientific method and for quantitative thinking and reasoning. For those going into the medical profession, the experiments you perform in life sciences will be much more difficult to interpret than those we do in Physics. Thus, this is an opportunity for you to see simple quantitative reasoning applied to real-world situations and see them work at high precision.

The mission of the course is to learn tools of critical and quantitative analysis and thinking, using Physics as a model. You do not need to memorize the formulas you encounter but you have to master a number of important concepts and know how to apply your knowledge on a broad range of problems in Science and Technology. We will be learning critical and quantitative reasoning. We will learn techniques to check our answers to make sure they are reasonable. We will learn the importance of experimentation on which our theories are built. We will learn problem-solving techniques. In addition, some of the content will have direct applications to your everyday lives as well as your future professional endeavors.

Homework: All homework will be completed using the online system at **masteringphysics.com**. Homework plays a central role in this course. If you have understood the underlying concepts the exercises are straightforward, but if you are trying to guess the “right equation” you will fail unnecessarily. Homework will be assigned for each chapter we cover. No homework extensions will be given. Homework will be completed online. We may be using a new website for homework this semester. Information about how to register for and complete online homework will be provided in class and on the class website.

The online homework will allow multiple attempts. The maximum number of points you can earn for each problem will be reduced following a certain number of attempts or if you use hints that are available. In addition, homework that is completed late will be reduced in value by an

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amount proportional to how late it is. Details on the homework grading will be announced in class and posted online before the first homework is due.

The code to enroll in this course on MasteringPhysics is [PHY2054COLWELLSPRING2013](#). When enrolling, **make your User ID equal to your UCF NID** (usually 2 letters and 6 numbers).

Examinations: The exams will include problems to be worked out and multiple choice questions. You must have with you at least one number two (2) pencil, and a computer scored answer sheet (a pink scantron) at every exam. You also must know your student ID number (PID) and record it accurately in the proper location on the Test Form and on each written exam. A **non-graphing, non-programmable** calculator may be used during exams. You may be provided with an equation sheet or allowed to bring your own. Details will be announced prior to the first exam. The Office of Disabilities Services will provide reasonable accommodation to students with disabilities. A valid UCF photo ID card is required when you turn in your exam answer sheet.

Teaching Method:

Content: We will follow the textbook in order, though some chapters and sections may be skipped as announced in class. Classes will include demonstrations and examples of working through problems. I will be posting notes on the class website. You may also wish to share notes with other students. The reading assignments in the schedule below are to be completed before class on the day listed. The design of the classes will assume that you have completed the reading assignment.

Questions: I favor an interactive classroom environment. Be prepared to ask and answer questions. Time permitting, I will answer your questions in class. There will also be a mechanism for you to send in questions by text message during class if you are uncomfortable asking it aloud. If you are confused about a topic or would like to follow-up, please come to office hours or make an appointment for another time.

Lectures: Lectures will be a combination of computer slide presentations, chalkboard lecture material (given on the screen via projector from a camera recording my writing), and clicker questions. I will post lecture materials on the course web site, but these are not a substitute for attendance.

Supplemental Instruction: Supplemental instruction (SI) is an academic success and retention program for historically difficult courses. SI uses regularly scheduled study sessions led by peers called SI leaders. SI leaders have taken the course before and received an "A". They undergo continuous training in proactive strategies to conduct effective SI sessions. SI leaders attend all classes, take notes, and do all the assignments. They conduct 4 SI sessions each week. During these sessions, SI leaders help students apply study strategies to the course content. SI leaders help students work cooperatively using the textbook, lecture notes, and other materials to build accurate information, solve problems, work on sample tests and practice to prepare for exams. SI

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leaders do not relecture but create a comfortable atmosphere for teamwork and group study and models effective study habits. In SI sessions, students learn how to integrate course content and study skills while working together.

SI sessions are voluntary, anonymous, and free to all students enrolled in courses that offer SI. Students who attend SI have a wide range of academic backgrounds and ability. Research shows that students who attend SI sessions on a regular basis can earn on an average one half to a full letter grade higher than their peers who do not attend SI.

Missed Work Policy: It is Physics Department policy that making up missed work will only be permitted for University-sanctioned activities and bona fide medical or family reasons. Authentic justifying documentation must be provided in every case (and in advance for University-sanctioned activities). At the discretion of the instructor, the make-up may take any reasonable and appropriate form including but not limited to the following: giving a replacement exam, replacing the missed work with the same score as a later exam, allowing a dropped exam, replacing the missed work with the homework or quiz average. Note that for this class, the dropped exam is the default policy for a missed exam for *any* reason. This is also the policy for homework and clicker absences.

Clicker Policy: The policy for clicker questions is different than that for homework and exam questions. In order to be perfectly clear at the start of class about what is allowed and not allowed with clickers, there is a separate clicker policy sheet that you are required to read. This will be distributed the first day of class and posted on the class web site. In summary: **you may not use anyone else's clicker. If you do, both of you will receive a grade of F for the class.**

Golden Rule: Please read this information at the website <http://goldenrule.sdes.ucf.edu>.

UCF Creed: Please read this information at the website <http://www.campuslife.sdes.ucf.edu/UCFcreedpage.html>.

Conduct: Please **turn off your cell phones** before entering class, and please don't have any sidebar conversations during class. There will be ample opportunity for you to talk during class at certain times. I encourage you to raise your hand and ask relevant questions in class.

Disability Access Statement: As stated on the website http://www.sds.ucf.edu/Faculty_Guide, "The University of Central Florida is committed to providing reasonable accommodations for all persons with disabilities. This syllabus is available in alternate formats upon request. Students with disabilities who need accommodations in this course must contact the professor at the beginning of the semester to discuss needed accommodations. No accommodations will be provided until the student has met with the professor to request accommodations. Students who need accommodations must be registered with Student Disability Services, Student Resource Center Room 132, phone (407) 823-2371, TTY/TDD only phone (407) 823-2116, before requesting accommodations from the professor."

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Collaboration Policy: You may not collaborate on exams. Exams will be of the usual closed-book, closed-notes type. Some clicker questions may be answered individually (at the beginning of class, to check reading comprehension), while in general they will encourage group discussion.

Email: It is very likely that I will need to send email to you regarding class logistics or material. These e-mails will go to the e-mail address on record at UCF. In addition, announcements will be posted on Webcourses (and/or Webassign). If you write an email to me, please identify yourself in it, and **please include PHY2054 in the subject line**. Send e-mail to my UCF e-mail (jec@ucf.edu), NOT within Webcourses or masteringphysics.

Calculators and Laptops: Calculators may be used for exams and for clicker questions. You may take notes on a laptop. However, **you may not use your laptop for facebook, web surfing, or other activities not directly related to class.**

Schedule:

We will cover chapters 20 through 26 in order, followed by chapters 17 and 18. We will do some of chapters 19, 27, and/or 28, schedule permitting.

Date	Reading	Topic
7-Jan	20.1-20.2	Introduction, charges, and atoms.
9-Jan	20.3-20.4	Coulomb's Law.
11-Jan	20.5-20.6	Electric Field.
14-Jan	20.7	Forces and torques in an electric field.
16-Jan	21.1-21.2	Electric Potential.
18-Jan	21.3-21.4	Electric Potential.
23-Jan	21.5-21.6	Electric Potential and Electric Field.
25-Jan	21.7-21.9	Capacitors, dielectrics, and energy.
28-Jan	Chapters 20-21	Review and catch-up on Chapters 20-21.
30-Jan	Exam 1	Chapters 20-21.
1-Feb	22.1-22.2	Current.
4-Feb	22.3-22.4	Batteries and electromotive force.
6-Feb	22.5-22.6	Ohm's Law, energy, and power.

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Date	Reading	Topic
8-Feb	23.1-23.2	Circuits and Kirchhoff's Laws.
11-Feb	23.3-23.5	Circuits.
13-Feb	23.6-23.7	Capacitors in circuits and RC circuits.
15-Feb	24.1-24.2	Magnetic field.
18-Feb	24.3-24.4	Currents and magnetic fields.
20-Feb	Review	Chapters 22-24.4.
22-Feb	Exam 2	Chapters 22-24.4.
25-Feb	24.5-24.6	Magnetic force.
27-Feb	24.7-24.8	Electromagnets.
1-Mar	25.1-25.2	Induced currents.
11-Mar	25.3-25.4	Faraday's Law.
13-Mar	25.5-25.6	Electromagnetic waves.
15-Mar	25.7-25.8	Electromagnetic waves and the E-M spectrum.
18-Mar	26.1-26.2	Alternating current and transformers.
20-Mar	Review	Chapters 24.5-26.2.
22-Mar	Exam 3	Chapters 24-25.
25-Mar	26.3-26.5	Capacitor circuits.
27-Mar	26.6-26.7	Inductors and oscillation circuits.
29-Mar	17.1-17.2	Nature of light.
1-Apr	17.3-17.4	Diffraction and Interference.
3-Apr	17.5-17.6	Single-slit and circular aperture diffraction.
5-Apr	18.1-18.2	Ray model of light and reflection.
8-Apr	18.3-18.4	Refraction and image formation.
10-Apr	18.5-18.7	Mirrors and the thin-lens equation.

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Date	Reading	Topic
12-Apr	Review	Chapters 26.3-26.7, 17-18.
15-Apr	Exam 4	Chapters 26, 17, 18.
17-Apr	TBD	TBD
19-Apr	TBD	TBD
22-Apr	Review and Catch Up	Review and catch up.
TBD	TBD	Cumulative Final Exam

We may adjust the schedule according to how long it takes us to cover each chapter.

Reminder: if you have questions, please ask. If you don't understand the material: see me in office hours; make an appointment if you cannot make office hours; take advantage of the Supplemental Instruction; study with your peers.

One Last Item:

This syllabus is subject to change. The latest version will always be available on the class web site.

Version 1.2: Exam dates and masteringphysics code added. December 24, 2012.

Version 1.3: Exam 4 date changed. Reading schedule and detailed class schedule filled in. December 27, 2012.