



Course Syllabus
PHY 2053C Section 0005/0006
Physics 1, Fall 2015

Tuesday, Thursday 12:30 – 1:45 PM/2:00 – 3:15 PM; MSB 350

Professor: Dr. William Kaden
Office: Physical Sciences Building (PSB) 308
Contact info: e-mail: william.kaden@ucf.edu (preferred method of communication)
Telephone: 407-823-1883
Office Hours: M 1:30 – 2:30 p.m. T 4:30-5:30 p.m. W 10:30 – 11:30 a.m.

Website: Homework assignments, class notes, grades, and announcements will be made on Webcourses (accessible from myUCF)

Textbooks:

• *College Physics* (3rd edition), by Knight, Jones, and Field and the Physics 2053 Lab Manual. As there is no guarantee that the same textbook will be used for your Physics II course, you may want to purchase a customized “Volume 1” version of the book assigned to this course (should be available at the UCF Bookstore).

• *i>clicker-2*: We will be using the i>clicker feedback system as a fundamentally important part of our in-class instruction every day we meet. There seems to be a newer i>clicker on the market now, but it is not yet clear to me if this will function within the course. For now, it would most likely be best to go with the i>clicker-2 version if you have not yet made your purchase. If you already have a different version, please let me know before purchasing a replacement. As soon as possible, register your clicker at www.iclicker.com/registration, and please be sure to enter your **NID** in the Student ID field, **including the two leading letters**.



Physics I – PHY 2053C 0005 – Fall 2015

Assignments and Grading:

Your final grade will be based on the following criteria:

Mid-term examinations (two highest scores of three exams): 33%

Final examination: 27%

Laboratory and in-lab exercises: 20%

Homework: 10%

Clicker questions: 10%

We will have three mid-term exams during the semester and one cumulative final exam at its culmination. The lowest of the three mid-term scores will be dropped, which is done, at least in part, to mitigate the deleterious side-effects associated with not being able to show up for an exam (whether figuratively or literally). Therefore, missing an exam, for **any** reason, will result in that exam being your dropped score. As bad days have a tendency of occurring when you least expect them, this means that you should plan to prepare as best as you can to achieve the best score possible on every exam to ensure that this insurance policy works in your favor when, and if, you might need it.

First Assignment:

As of Fall 2014, all faculty are required to document students' academic activity at the beginning of each course. In order to document that you began this course, please complete the Syllabus Quiz Assignment on Webcourses@UCF by the end of the first week of classes, or as soon as possible after adding the course. Failure to do so will result in a delay in the disbursement of your financial aid.

Late homework will have a 25% penalty for each day past the due date. All homework assignments will be posted and completed within Webcourses. To account for situations where it is not possible for homework to be completed and posted for **any** reason, one score will again be dropped. As stated above, this means that you should plan ahead and complete your assignments as early as possible to leave yourself time to work around the inevitable power, connectivity, etc. issues that are sure to show up when you can least afford them.

Like mid-terms and HW assignments, your three lowest clicker scores (one score per day of class) will also be dropped. This is intended to account for unavoidable absences over the span of the semester. You must bring your clicker to class every day, but if you do not have it, or it is not functioning for any reason, check in with me at the beginning and end of class, so that I can record your attendance.

Everything done within the laboratory portion of the course will count for 20% of your overall grade. The exercises help develop the critical thinking skills essential to your success in the course and help put the fundamental principles discussed throughout the lectures into real-world context. For many, the additional hands-on experience gained from the lab work will help solidify your understanding of the course material, and, in turn, potentially improve your test scores on exams.

All assignment and exam scores are final 5 business days after their return. Contact me within this one-week window of time with any grading inquiries. For any additional missed work questions, please refer to the missed work policy towards the end of the syllabus.

Physics I – PHY 2053C 0005 – Fall 2015

The default letter grade scale for this course will be as follows (on a percentage basis):

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
93-100	88-93	84-88	79-84	75-79	70-75	65-70	60-65	57-60	53-57	50-53	<50

I reserve the right to adjust the grade scale as needed (on an item-by-item basis), and will post the scaling factors (the curve) after each exam. These adjustments will only help your grade.

Course Description and Requirements:

This course is the first portion of a two semester sequence in introductory physics offered primarily for students majoring in information technology, biological sciences, and health professions. Emphasis will be placed on developing an understanding of core principles and concepts, with quantitative examples requiring the use of basic-level algebra and trigonometry being used to help clarify and illustrate their utility. Therefore, students should have a good working knowledge of algebra and trigonometry, consistent with the completion of **MAC1104** and **MAC1114** (or equivalent), prior to enrollment in this course.

All course information (syllabus, class notes, announcements, etc.) will be made available on the Webcourses website associated with the class. To keep you updated throughout the course, all important announcements will also be communicated using your official UCF e-mail account, so be sure to check this daily for updates. The website will be updated as the course progresses, and all homework assignments will be posted on the Webcourses page.

Time Management:

This is a fast paced course, with content chosen to meet national standards for physics courses often used to prepare students for careers in Medicine and Life Sciences. Typically, we will complete one chapter's worth of material per week. Your primary sources of information will be the text book, your class notes, content posted to the Webcourses website, and your instructor (me). The last pages of this syllabus detail which sections of the text you should have read prior to each meeting of the class. To succeed, it is estimated that you will need to allocate the following effort to this course:

- 20-30 pages of text in pre-class reading – 3 hours
- Completing homework assignments and studying concepts – 5 hours
- Completing laboratory exercises – 3 hours
- Classroom time – 3 hours
- Total estimated weekly effort – 14 hours

As you should see, time-management will be essential if you are to keep up with the pace of the course. **Since the fundamental concepts of physics being covered in this course iteratively build upon themselves, it is absolutely imperative that you do not allow yourself to fall behind. If you do not understand something covered in the previous week, then you will not have the foundation necessary to understand what is being taught during the current week. Do not let yourself fall into this trap, for your situation will become increasingly hopeless the longer you put things off. Also, do not assume that simply reading the material is enough. Until you can consistently work through sample problems, you do not understand the material well enough.**

Course Objectives:

Aside from the obvious fact that UCF is most likely requiring you to complete this course as a requirement for your degree, an understanding of basic physics, and, more importantly, the scientific-method-based approach to problem solving involved in the development of that understanding, can prove enlightening and useful for anyone in almost any situation. For many of you, physics may provide

Physics I – PHY 2053C 0005 – Fall 2015

a far simpler platform for the validation of the scientific method, with more instantly satisfying results (in the form of high-precision results validating relatively simple observation-based theorems) than may be achievable in some of the more complex sciences.

The emphasis of this course is motion, and the main topics that we will cover are:

- Mathematical background for physics
- Linear Motion in one and two dimensions
- Force and its relation to translational motion
- Circular motion
- Kinetic and potential energy/power
- Linear momentum
- Rotational motion
- Rotational energy/power
- Torque
- Composite motion (combined translation and rotation)
- Angular momentum
- Waves and oscillations

The goal of this course is not the memorization of material (equation sheets will be allowed during exams), but, rather, to use the physics of Newtonian mechanics to hone your abilities in critical thinking and quantitative analysis as a means of improving your ability to approach new problems with unknown solutions in your life beyond this course. In the broad sense, we will focus on problem solving techniques and the importance of observation, postulation, experimentation, and validation during that process.

Homework:

Homework will provide an important supplement to your classroom experience in this course. This is where you will be able to ensure that you actually know what you already think you know. Given the aforementioned warning about falling behind, completing these assignments will provide an essential feedback mechanism to ensure your success. Given this important role, there will generally be one assignment per week and extensions will not be provided. After the due date, scores will be reduced at a rate of 25% per day. All assignments will be posted through the Webcourses page associated with this course, and reminders will be provided both in person and through e-mail/Webcourses announcements. While you are generally welcome and encouraged to work with others in this course (homework assignments included), you **will** do better overall if you are able to do the homework on your own rather than simply co-opting the work of others.

Examinations:

33% of your cumulative grade will be determined by the average of your two highest mid-term examination results. Another 27% of your cumulative grade will come from the results of a comprehensive final examination covering everything presented throughout the course. The exams will generally feature a combination of multiple choice and long-form problem solving questions with an emphasis intended to favor conceptual understanding over numerical accuracy (calculators work pretty well and the internet is full of factual content – I'm interested in developing what you can bring to the equation). You must have at least one number two (2) pencil, and a computer scored answer sheet (pink scantron) at every exam. Furthermore, you must accurately record your student ID number in the proper location on the Test forms and written portions of the exams to allow for computational tracking of your scores throughout the term. A non-graphing, non-programmable calculator may be used during

Physics I – PHY 2053C 0005 – Fall 2015

exams. 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 all Exam materials.

Teaching Method:

Content:

As displayed in the course schedule, we will cover the textbook chapters in the following order: 1-6, 10, 9, 7-8, 14. Classes will include demonstrations and interactive problem solving. Class notes will be made available after the conclusion of each meeting on the Webcourses page. The content of each class will assume that you have completed the designated reading assignment *beforehand*.

Questions:

The format chosen in this class is intended to be highly interactive, and questions are highly encouraged. Provided sufficient time, I will attempt to answer all questions within class periods. Should the time allotted for the regular meetings prove insufficient, and you find yourself struggling with lingering questions, please make use of my office hours, or arrange an appointment to meet at another time.

Lectures:

Typical class-time will be spent working through a computer slide narrative of the material, with practical reinforcement in the form of demonstrations and interactive clicker questions used throughout to provide feedback on the efficacy of my teaching and your learning as we go.

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 (me), make-up material (if necessary) 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.

Golden Rule:

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

UCF Creed:

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

Conduct:

Discussion with classmates in small groups is at the core of what we are trying to foster in this class. That being said, such discussions are not always appropriate during the more typical “lecture” and demonstration portions of the class since they may ultimately prove distracting to others. Out of respect to both fellow students and the instructor (me), I would ask that students use the conventional hand raising tradition to request my attention, should questions arise during these times.

Disability Access Statement:

Physics I – PHY 2053C 0005 – Fall 2015

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.

Collaboration Policy:

Unless specifically directed otherwise, collaboration is encouraged for all assignments and in-class clicker problems. Exams, however, will be of the typical closed-book, closed-notes variety (equation sheets permitted).

e-mail:

Class updates and feedback will often be delivered to you via e-mail. For this purpose, I will be using your official e-mail address on record at UCF. As stated above, general updates and announcements will also be posted on Webcourses. Any e-mails sent to me for this course should (1) identify the sender (you) by name, (2) **include PHY2053 in the subject line**, and (3) be sent to my official .ucf address given above and **NOT through Webcourses**.

Calculators and Laptops:

Non-graphing, non-programmable calculators may be used for both exams and when solving in-class clicker questions. In addition, laptops may be used to take notes, or accomplish other class related functions (i.e. plotting graphs using excel for example). **Using laptops or mobile devices to check Facebook, surf the web, chat via text messaging, or for any other activity not directly related to class will not be permitted.**

Diversity and Inclusion:

The University of Central Florida considers the diversity of its students, faculty, and staff to be a strength and critical to its educational mission. UCF expects every member of the university community to contribute to an inclusive and respectful culture for all in its classrooms, work environments, and at campus events. Dimensions of diversity can include sex, race, age, national origin, ethnicity, gender identity and expression, intellectual and physical ability, sexual orientation, income, faith and non-faith perspectives, socio-economic class, political ideology, education, primary language, family status, military experience, cognitive style, and communication style. The individual intersection of these experiences and characteristics must be valued in our community.

Title IX prohibits sex discrimination, including sexual misconduct, sexual violence, sexual harassment, and retaliation. If you or someone you know has been harassed or assaulted, you can find resources available to support the victim, including confidential resources and information concerning reporting options at www.shield.ucf.edu and <http://cares.sdes.ucf.edu/>.

If there are aspects of the design, instruction, and/or experiences within this course that result in barriers to your inclusion or accurate assessment of achievement, please notify the instructor as soon as possible and/or contact Student Accessibility Services.

For more information on diversity and inclusion, Title IX, accessibility, or UCF's complaint processes contact:

- Title IX – EO/AA - <http://www.eeo.ucf.edu/> & askanadvocate@ucf.edu

Physics I – PHY 2053C 0005 – Fall 2015

- Disability Accommodation – Student Accessibility Services - <http://sas.sdes.ucf.edu/> & sas@ucf.edu
- Diversity and Inclusion Training and Events – www.diversity.ucf.edu
- Student Bias Grievances – Just Knights response team - <http://jkrt.sdes.ucf.edu/>
- UCF Compliance and Ethics Office - <http://compliance.ucf.edu/> & complianceandethics@ucf.edu
- Ombuds Office - <http://www.ombuds.ucf.edu>

Schedule:

Date	Reading	Topic(s)
Aug. 25	Chapter 1	Representations of Motion; Motion Diagrams; Vectors; Vector Addition
Aug. 27	Sections 2.1-2.5	One-Dimensional Motion
Sep. 1	Sections 2.6-2.7	Free-Fall and One-Dimensional Motion Problems
Sep. 8	Sections 3.1-3.4	Vector Math and Components
Sep. 10	Sections 3.5-3.8	Two-Dimensional Motion
Sep. 15	Sections 4.1-4.3	Introduction to Forces
Sep.17	Sections 4.4-4.7	Newton's Laws and Force Problems
Sep. 22	Catch up and Review	Chapters 1-4
Sep. 24	Exam 1	Chapters 1-4
Sep. 29	Sections 5.1-5.4	Equilibrium; Mass and Weight; Normal Forces
Oct. 1	Sections 5.5-5.8	Friction; Drag; Ropes; and Pulleys
Oct. 6	Sections 6.1-6.3	Uniform Circular Motion
Oct. 8	Sections 6.4-6.6	Orbits and Newton's Law of Gravity
Oct. 13	Sections 10.1-10.4	Work and Energy (Omit Rotational Kinetic Energy portion of Section 10.3)
Oct. 15	Sections 10.6-10.8	Conservation of Energy; Power
Oct. 20	Catch up and Review	Chapters 5,6,10
Oct. 22	Exam 2	Chapters 5,6,10 (no Collisions)
Oct. 27	Sections 9.1-9.3	Impulse and Momentum
Oct. 29	Sections 9.4-9.6	Conservation of Linear Momentum
Nov. 3	Sections 7.1-7.3	Rotational Motion and Torque
Nov. 5	Sections 7.4-7.7	Rotational Dynamics and Moment of Inertia; Center of Gravity
Nov. 10	Sections 9.7 and 10.3	Conservation of Angular Momentum and Rotational Kinetic Energy
Nov. 12	Catch up and Review	Chapters 9,7,10.3
Nov. 17	Exam 3	Chapters 9,7,10.3 (Collisions)
Nov. 19*	Sections 8.1-8.3	Static Equilibrium and Hooke's Law
Nov. 24	Sections 14.1-14.3	Simple Harmonic Motion
Dec. 1	TBD/Review	TBD
Dec. 3	TBD/Review	TBD
Dec 10	10:00 a.m. – 12:50 a.m.	Cumulative Final Exam

*Class will end early to accommodate 3:00 p.m. campus closure due to a Football game on Nov. 19.

Physics I – PHY 2053C 0005 – Fall 2015

Note: This schedule (and syllabus) may be subject to change based upon our “experimental” rate of progress through the course. The most current version of both will always be available on Webcourses.