

PHY 2053C: College Physics I, Section 1, Spring 2013

Instructor: Dr. Saiful Khondaker,

Class time: TuTh 10:30 – 11:50, MAP 260

Office Hours: Tu 12-1 pm, 3-4 pm, Th 12-1 pm or by appointment

Contact info: Physical Science 465 (during office hour), Research pavilion 432 (outside office hour), phone: (407) 864-5054, email: saiful@ucf.edu

Teaching Assistant: HUANG AIQUN

Website: <http://physics.ucf.edu/~khondaker/teaching.htm> for syllabus and course related announcements.

www.webassign.net: for homework assignments

myUCF Grades: for grades

Textbook: PHYSICS by J. D. Cutnell & K. W. Johnson, John Wiley & Sons (8th edition) and **PHY 2053 Laboratory Manual** Available at the bookstore. All students must have the Lab Manual by the end of the first week of classes.

• *iClicker:* We will be using the iClicker-2 feedback system in class every day. You may also use older version of the iClicker if you already have it. Our response system is compatible with both versions. Register your clicker at www.iclicker.com/registration. Be sure to enter your **NID** in the Student ID field on the web site, **including the two leading letters**. Please see details in the last page.

Other books that you might find helpful for this class (not required):

Shaum's Outline College Physics. Frederic Bueche, Eugene Hecht. A very useful aid for both Physics I and II, especially in the clarification of concepts. Contains the basic theory (in form of notes) and a large number of solved and unsolved exercises.

3,000 Solved problems in Physics (Shaum's solved problem series) Alvin Halpern. It contains no theory but only solved exercises covering the material of both Physics I and Physics II. Very useful in the clarification of techniques and methods for solving exercises from basic up to intermediate to advanced level.

Grading:

Your grade in this course is based on the following weighting:

Mid-term exams	36% total (18% each of three exams with one dropped)
Final exam (comprehensive)	24%
Clicker's and Quizzes	12%
Homework	10%
Laboratory	18%

Total:	100%
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The Final Letter Grade Will Be Determined As Follows:

88%-100% A	75%-87% B	60%-74% C	50%-59% D	Below 50% F
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Plus and minus grades (A-, B+, etc.) will **NOT** be given. I reserve the right to adjust the grade scale, and the grade scale for exams will be posted after each exam with adjustments (a “curve”) if any.

Exams:

There will be three in-class exams (midterm) during the semester, and a cumulative final exam at the end of the semester. All exams may be written, multiple-choice, or a combination of the two. The weight of each midterm exam will be 18% and the lowest of the regular mid-terms will be dropped. Thus the total weight of midterm exams will be 36%. If you miss an exam for **any** reason, that will be your dropped exam. Therefore, you should plan to make your best effort on all mid-terms. Because the final is cumulative, it gives you an opportunity to show you have learned material from the early part of the course where you might not have done as well on earlier exams. Therefore, if it helps your grade to do so, the final exam will count for 24 %. You must have a pencil or a pen and a scientific calculator for each exam. You **MUST** know your student ID (NID) number and record it accurately in the proper location on the Test Form and on each written exam. **THERE WILL BE NO MAKE-UP EXAMS AND NO EXAMS WILL BE GIVEN EARLY OR LATE.**

All examinations will be closed book and closed notes. No grade information will be given over telephone or by e-mail. The grades of exams, quizzes, labs, and homework will be added together to determine your final grade. 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.

Homework:

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. Since homework is so important for your understanding the material, expect approximately one per week. No homework extensions will be given. Homework will be assigned online at <http://www.webassign.net/>. You need to self-enroll using the Class Key: **ucf 8198 4665**. You can get an access code for this web site with every new book you buy or you can purchase an access code at the bookstore or via the web. There will be one assignment approximately every week, with 5 to 10 exercises and problems. Each student must submit an individual solution set. Ten percent of your grade will be determined from your average homework score. Homework will be generally due between 5-7 days after posting. Doing your homework will help prepare you for your exams!

Please check your WEB-ASSIGN account frequently. Please never say you did not know homework had been assigned, or forgot to do it on time; this will not be accepted as an excuse for missed homework. Homework due date/time will never be extended. One homework assignment will be dropped to handle the case where you cannot turn in an assignment for some reason.

The WebAssign class key that you must use to enroll in this class is:

When enrolling, make your User ID equal to your UCF NID (usually 2 letters and 6 numbers).

Laboratory:

The laboratory component of PHY2053 covers material related to class lectures. The laboratory is required for all students enrolled in the course. The lab will be held once a week, total two hours and 50 minutes each, which will be divided into *a*) a lab worksheet practice time (30-35 min) *b*) a problem solving session (recitation, 30-35 min) *c*) quiz time (~10 minutes), and *d*) experiments as described in the Lab Schedule (95 minutes). Parts *a-c* will be supervised by the faculty who may or may not be involved in the lecture component of the course, and part *d* by a TA. The worksheets and the recitations will be posted on course website prior to the class. You should print them and bring to the lab. You will work in small groups on the concepts described in the lab worksheet and on the recitation problems. The instructor will be available to help; selected (most challenging) problems may be solved by the instructor on the board. Note that everything done in your laboratory sections counts for 18% of your overall course grade. The lab exercises will also help you do better on your exams. Please refer to the lab syllabus for details.

Quizzes:

The quizzes will be done in every class using i-clicker interactive response system. Therefore, you must bring yours to class every day. There will be some points for just responding through the i-clicker even if the answer is incorrect. Therefore, attendance is very important. Quiz grades will determine 12% of your final grade. No scantrons will be required. There will be no makeup quizzes. Your three lowest clicker day scores will be dropped to handle unavoidable absences.

Course Description and Requirements:

PHY2053C is the first of two-semester sequence in introductory physics offered primarily for students majoring in information technology, the biological science and pre-health professions. Emphasis is placed on understanding major principles and concepts 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. Please study appendices A to E at the end of your textbook to reinforce your fundamental algebra and trigonometry skills. Information about this course will be available at <http://physics.ucf.edu/~khondaker/teaching.htm>. In addition, I will use your official UCF e-mail to send you announcements from time to time. The website will be frequently updated as the course progresses itself.

This is a very 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 one chapter per week. Your primary sources of information for the new concepts are your instructor, the textbook and your 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 2053C:

- 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:

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 work. 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.

Teaching Method:

Content: We will follow the textbook in order covering chapters 1 through 10. Classes will include demonstrations and examples of working through problems. I will be posting notes on the class website. The “topics to be covered” in the schedule below are your reading assignments to be completed before class. 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. If you are confused about a topic or would like to follow-up, please come to office hours or visit SI (see below) leader.

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(SI) and Tutoring:: 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. Your SI leader is Marina Goldgisser. Check on the website of the Student Academic Resource Center (www.sarc.sdes.ucf.edu) for the days and times of tutoring hours for this course. 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 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.

Policies:

Attendance: Class attendance is very important since by missing a class you may miss a quiz or a mid-term exam that may be equivalent to a failed quiz or exam, unless the absence is appropriately justified and excused. Since we will use i-clicker everyday, by answering a question using your i-clicker, you will also record your attendance.

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: **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. We will take a 2-3 minute break each day, and are also encouraged to talk during clicker questions. However, it is imperative that the class is quiet at all other times so that your fellow students are not distracted. 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."

Collaboration Policy: Collaboration during exams is strictly prohibited. Exams will be of the usual closed-book, closed-notes type. On the other hand, in order to learn the materials, collaboration and group discussions outside of classroom is highly encouraged.

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 the course website. If you write an email to me, please identify yourself in it, and **please include PHY2053 in the subject line**. Send e-mail to my UCF e-mail

(given above). No grade information will be provided via email. Please do not send excuses for absences via email.

Calculators and Laptops: A non-graphic, non-programmable calculator Calculators may be used for exams. While in the class any calculators can be used. 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.**

ID: Picture ID is required in all tests and final exam.

Important UCF Dates (Spring 2013):

Classes begin:	Monday, Jan. 7
Late registration on myUCF:	January 7 - 11
Drop/Swap deadline on myUCF:	Thursday, January 10
Last day for full refund:	Thursday, January 10
Withdrawal deadline:	Monday, March 11
Classes end:	Monday, April 22
Finals week:	April 24 – 30
Grades due in myUCF:	Friday, May 3

UCF Spring 2013 Holidays and Breaks (no classes):

Martin Luther King Jr. Day: Monday, January 21
 Spring Break: March 4 – 9

Class Schedule (tentative):

Week/Chapter	Topics to be covered	Recitation problems
Week 1 (Jan 7-11) Chapter 1	Chapter 1: Introduction and Mathematical Concepts The Nature of Physics Units The Role of Units in Problem Solving Trigonometry Scalars and Vectors Vector Addition and Subtraction The Components of a Vector	No recitation
Week 2 (Jan 14-18) Chapter 2	Chapter 2: Kinematics In One Dimension Displacement Speed and Velocity Average Velocity Instantaneous Velocity Average and Instantaneous Acceleration	Ch.1 #15,21,24,40,49
Week 3 (Jan 23, 25) Chapters 2-3	Equations of Kinematics for Constant Acceleration Applications of the Equations of Kinematics Freely Falling Objects Graphical Analysis of Velocity and Acceleration Relative Velocity along a Straight Line Chapter 3: Kinematics in Two Dimensions Displacement, Velocity and Acceleration Equations of Kinematics in Two Dimensions	Ch.2 # 9,18,35,44,62
Week 4 (Jan 28-Feb 1)	Projectile Motion Relative Velocity in Two Dimensions	Ch.3# 2,8,16,21,27,28,29

Chapters 3-4	Chapter 4: Forces and Newton's Laws of Motion Force and Mass Newton's First Law of Motion Newton's Second Law of Motion The Vector Nature of Newton's Second Law of Motion Newton's Third Law of Motion Types of Forces The Gravitational Force	
Week 5 (Feb 5) Chapter 4 cont'd	Mass and Weight The Normal Force Apparent Weight	Ch. 3# 42,78 Ch.4 # 3,5,12
Feb. 7	Midterm exam 1 (Chapters 1-3)	
Week 6 (Feb 11-15) Chapters 4-5	Static and Kinetic Frictional Forces Tension Equilibrium Applications of Newton's Laws Nonequilibrium Applications of Newton's Laws Chapter 5: Dynamics of Uniform Circular Motion Uniform Circular Motion Centripetal Acceleration Centripetal Force	Ch.4 # 45,58,71,76
Week 7 (Feb 18-22) Chapters 5-6	Banked Curves Satellite Motion Apparent Weightlessness and Artificial Gravity Vertical Circular Motion Chapter 6: Work and Energy Work Done by a Constant Force The Work-Energy Theorem and Kinetic Energy Gravitational Potential Energy	Ch. 5 # 10,15,21,29,60
Week 8 (Feb 25-Mar 1) Chapters 6-7	Conservative and Nonconservative Forces The Conservation of Mechanical Energy Nonconservative Forces and the Work-Energy Theorem Power Other Forms of Energy and the Conservation of Energy Work Done by a Variable Force Chapter 7: Impulse and Momentum The Impulse-Momentum Theorem Conservation of Linear Momentum	Ch. 6 # 9,11,20,26,45,57
Week 9 (Mar 11-15)	Collisions in One Dimension Collisions in Two Dimensions Elastic and Inelastic Collisions Center of Mass	Ch. 6 # 52,61,64 Ch. 7 # 7
Week 10 (Mar. 19) Mar. 21	Midterm Exam 2 (Chapters 4-6) Chapter 8: Rotational Kinematics Rotational Motion and Angular Displacement Angular Velocity and Angular Acceleration The Equations of Rotational Kinematics	Ch. 7 # 14,32,40,45
Week 11 (Mar 25-29) Chapters 8-9	Angular Variables and Tangential Variables Centripetal and Tangential Acceleration Rolling Motion The Vector Nature of Angular Variables Kinetic Energy of Rotation and Moment of Inertia	Ch. 8 # 12,25,37,54,58

	Chapter 9: Rotational Dynamics Action of Forces and Torques on Rigid Bodies Rigid Bodies in Equilibrium and Center of Gravity	
Week 12 (Apr 1-5) Chapter 9	Newton's Second Law for Rotational Motion Rotational Work and Energy Angular Momentum Conservation of Angular Momentum Vector Nature of Angular Quantities	Ch. 9 # 12,25,37,44 49,57,60
Week 13 (Apr 8-12) Chapter 10	Chapter 10: Simple Harmonic Motion and Elasticity The Ideal Spring and Simple Harmonic Motion Simple Harmonic Motion and Reference Circle Energy and Simple Harmonic Motion The Pendulum	Ch. 9 # 52,72 Ch. 10 # 22,24,27
Week 14 (Apr 16) Apr. 18	Midterm Exam 3 (Chapters 7-9) Damped Harmonic Motion Driven Harmonic Motion and Resonance Elastic Deformation Stress, Strain, and Hooke's Law	No recitation
Apr 30, 2012 10.00 – 12.50 pm	Cumulative Final Exam (ch 1-10)	

Instructions to self-enroll into Webassign:

You need to self-enroll into webassign (<http://www.webassign.net/>) in order to access and submit the homework. Your Class Key for this class is: **ucf 8198 4665**. You need to purchase an access code for this web site. This may come with your book or you can purchase an access code at the bookstore or via the web. There are links for student support, including live chat, as well as access to login to your account on that main page. Please use your student ID (NID) when enrolling. Make sure the Student ID is input correctly before clicking "Create My Account". The following instruction is helpful. If you need additional help, **please do not contact me** rather contact the webassign customer support.

To self-enroll for a class:

1. Go to the WebAssign login page (www.webassign.net), and click **I have a Class Key**.
2. Enter the class key your instructor gave you, and click **Submit**.
3. On the verification page, check the class information and determine whether or not the correct class and section is displayed.
 - If the correct class and section is listed, click **Yes, this is my class** and go to step 4 on page
 - If the listed class or section is not correct, click **No this is not my class**. Try entering your class key again, in case you might have mistyped a character. If the correct class is still not displayed, contact your instructor.
4. If you have an existing WebAssign account, select **I already have a WebAssign account**, type the **Username**, **Institution**, and **Password** for your account, and click **Continue**.
You are enrolled in the class and logged in to WebAssign using your existing account.
5. If you do not have an existing WebAssign account, you can create one now.
 - (a) Select **I need to create a WebAssign account**, and then click **Continue**.
 - (b) Type the username that you would like to use for your WebAssign account in the **Preferred Username** field, and click **Check Availability** to see if the username that you want is available.
Usernames are not case-sensitive, so BobSmith, bobSmith, and bobsmith are all the same username.
 - (c) After confirming the availability of your new username, type a password in both the **Choose a Password** and **Confirm password** fields.
Ensure that your password meets the displayed requirements, which might be different than those shown above. Passwords are case-sensitive, so IAmCa3sar is not the same as iamca3sar.
 - (d) Enter your **First Name**, **Last Name**, **Email Address**, and your **Student ID (NID) Number**.
 - (e) Click Create My Account.

I>clicker registration:

You will need an i>clicker or i>clicker2 remote for in-class participation. I>clicker is a response system that allows you to respond to questions I pose during class; you will be graded on that feedback and/or participation. Each clicker has a unique serial number on the back of the remote. Place a piece of scotch tape over that bar code and ID to preserve it. In order to receive credit for your votes, you will need to register your i>clicker remote online by January 15, 2013. You must have come to class and voted at least once in order to complete this registration properly. Once you have voted on a question in my class, go to www.iclicker.com/registration. Complete the fields with your first name, last name, student id and remote id. Your student id is your UCF NID (usually 2 letters and 6 numbers). The remote id is the series of number and sometimes letters found on the bottom of the back of your i>clicker remote. I>clicker will be used everyday in the class and you are responsible for bringing your remote daily.