

Physics 141 Course Information

General Physics I - Mechanics

Fall 2010

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Office Hours:	Will be posted on the course web page
Textbook:	<i>University Physics</i> , Volume 1 of 12 th Edition, Young & Freedman
Online Homework:	<i>Student Access Kit</i> , for Mastering Physics Online Course Material Course ID: UICPHY141FALL10
Class Participation:	The <i>iClicker</i> remote feedback unit is required in lecture
Laboratory Text:	<i>Physics 141 Laboratory Instruction CD (Do not buy, will be handed out)</i>
Disclaimer:	The terms of this syllabus are subject to change by announcements in class, on the course website (blackboard), or by email.

Introduction:

Physics 141 is a calculus-based course focused primarily on classical mechanics. It is the first course in a sequence of three introductory “foundation” physics courses, where Physics 141 covers classical mechanics, Physics 142 covers electricity and magnetism, and Physics 244 covers modern physics.

The Text and Lectures:

Reading the textbook is an essential part of the course. Students will benefit the most if they read ahead *before* coming to the lecture. Students are expected to take accurate notes during the lecture and to ask relevant questions. Each student is individually responsible for the material covered in the book as well as each lecture.

Homework:

Homework is an essential part of the course, and the primary means by which you will discover if you understand the material. It is very important that you spend time working on understanding how to apply the “big ideas” of lecture to specific problems. Working in small groups is often a useful environment to tackle difficult problems. In case of difficulty, please contact the tutors, laboratory TA’s, or instructors for additional assistance.

Weekly homework assignments will primarily be performed online at the Mastering Physics web page (www.masteringphysics.com). They will be “due” by the day and time listed online. The online system will always “save your work” so you can easily work on the problems continuously throughout the week. Do NOT leave it all for the last minute. The maximum value of a particular homework starts at full credit if completed before the due date, and decreases after the due date such that homework completed two or more days late will be worth only 20%. To access our homework site, go to the above website, and when you register and log in for the first time, choose the Mastering Physics Course ID of: **UICPHY141FALL10**. The access kits are bundled with a new textbook purchase at the UIC bookstore. Otherwise you will have to obtain or purchase separately (either online or at the bookstore) a student access kit for Mastering Physics.

In addition to the online homework, there might be additional homework assignments and/or in-class quizzes. Relevant details will be given in your lecture by your Instructor.

Laboratory:

Physics is at its heart an experimental science, and the laboratory component is an integral part of this course. Be sure you have also signed up for the lab (LAB) section in addition to your lecture (LCD). All experiments **must be completed** to pass this course. Make-up Labs must be scheduled with your lab TA on one of the allowed weeks for make-up labs. Your laboratory manual will come in a CD format that will be passed out in class. There are two types of labs – each is in a different room. Be sure to check the course outline for which room you need to be in for each lab.

Standard Experiments use the “air table” and are held in room 2108 SEL

Computer-based Experiments are held in room 2279 SEL

Please note: Room 2108 is somewhat “hidden” at the back of one of the long hallways in SEL, around the corner.

Examinations:

There will be three written “closed book” examinations during the course of the semester. Common exams are given to all Physics 141 sections and a common grading system is applied. It is your responsibility to be available for all examinations. This is the most important requirement of this course. There will be **no** make-up exams given after the exams are over – **no exceptions**.

Students must bring to the exams a working calculator, and pens or pencils. Textbooks, cell phones, computers, or **any** forms of wireless communication are strictly prohibited in an exam. Giving or receiving aid in an examination is cause for dismissal from the University. Any other violation of academic honesty can have the same effect.

It is your responsibility to be available for all examinations, to take the exams at the arranged time, and to insure your exam is turned in and collected by the Instructor.

In Class Participation:

We will be utilizing the iClicker (<http://www.iclicker.com/>) class participation remote system. Every student must have their own individual remote. Your same remote can be used for all “iClicker” classes at UIC, even if different courses are taken in the same semester. You can purchase this remote at the UIC bookstore, or online. You must register your remote at the iClicker web site given above. Use your UIC email username for your “Student ID” when registering your iClicker.

Grades:

Final scores are based on the following 6 items, with the percentage weighting as given:

Exam I	20%
Exam II	20%
Final Exam	25%
Lab Work	15%
Homework/Quiz	10%
Attendance/Participation	10%

A single letter grade of A, B, C, D or F is assigned at the end of the semester according to the final score each student has earned. The grade of incomplete (I) is given **only** in special cases according to very strict criteria.

Course Web Site:

The course web site is <http://physicsweb.phy.uic.edu/141> . There is also a Phy141 web page handled through the UIC blackboard system (you can find the direct link from the course site). The blackboard site will list important course information including practice exams, solutions and contact information. It will also be the primary source of up-to-date information for what is happening in the course.

Students with disabilities who require accommodations for access and participation in this course must be registered with the Office of Disability Services (ODS). Please contact ODS at 312/413-2103 (voice) or 312/413-0123 (TTY).

Physics 141 Course Outline - Fall 2010

Text: *University Physics*, Volume 1 of 12th Edition, Young & Freedman
 Homework: Mastering Physics Online Web Homework: www.masteringphysics.com
 Laboratory: *Physics 141 Laboratory Instruction CD*

Exam 1 - Wednesday, September 29, 6-8 PM; covering material from Chapters 1-5.5
 Exam 2 - Wednesday, November 3, 6-8 PM; covering material from Chapters 6-10.4
 Final - During finals week; cumulative, but predominately covering Chapters 10.5-13.8

Week	Chapter Sections	Topics	Online Homework Assignment	Laboratory
1 Aug. 23	<u>Chapter 1</u> 1.1 to 1.10	<u>Units and Vectors</u> Standards, Units and Conversions Uncertainty and Significant Figures Orders of Magnitude, Estimating Vectors – Addition, Components, Unit Vectors, Products	Intro to MasteringPhysics <i>and</i> Online HW 1 (Vectors) Due: Sep. 1	<i>No Lab Scheduled</i>
2 Aug. 30	<u>Chapter 2</u> 2.1 to 2.6	<u>Motion in One Dimension</u> Displacement, Time Average Velocity Instantaneous Velocity Acceleration Motion with Constant Acceleration Freely Falling Bodies Velocity and Position by Integration	Online HW 2 (One Dimensional Kinematics) Due: Sep. 8	<u>Experiment 1</u> <i>Introduction and Displacement</i> Computer Based in room 2279
3 Sep. 6 <i>Sep. 6 is a holiday (no class</i>	<u>Chapter 3</u> 3.1 to 3.5	<u>Motion in Two or Three Dimensions</u> Position and Velocity Vectors Acceleration Vector Projectile Motion Circular Motion Relative Velocity	Online HW 3 (Motion in Two or Three Dimensions) Due: Sep. 15	<u>Experiment 2</u> <i>Velocity and Acceleration</i> Computer Based in room 2279
4 Sep. 13	<u>Chapter 4</u> 4.1 to 4.6	<u>Newton's Laws of Motion</u> Force and Interactions Newton's First and Second Law Mass and Weight Newton's Third Law Free-Body Diagrams	Online HW 4 (Newton's Laws of Motion) Due: Sep. 22	<u>Experiment 3</u> <i>Projectile Motion</i> Standard Experiment in room 2108

5 Sep 20	<u>Chapter 5</u> 5.1 to 5.5 <i>Review for Exam 1</i>	<u>Applying Newton's Laws</u> Particles in Equilibrium Dynamics of Particles Frictional Forces Dynamics of Circular Motion Fundamental Forces of Nature	Online HW 5 (Applying Newton's Laws) Not graded	<u>Experiment 4</u> <i>Force</i> Computer Based in room 2279
6 Sep. 27	<u>Chapter 6</u> 6.1 to 6.4 <i>Exam 1</i> <i>Sep. 29</i> <i>6-8 PM</i>	<u>Energy and Kinetic Energy</u> Work and Kinetic Energy Work with Varying Forces Power	Online HW 6 (Work, Kinetic Energy and Power) Due: Oct. 6	<i>No Lab Scheduled</i>
7 Oct. 4	<u>Chapter 7</u> 7.1 to 7.5	<u>Potential Energy and Energy Conservation</u> Gravitational and Elastic Potential Energy Conservative and Nonconservative Forces Force and Potential Energy Energy Diagrams	Online HW 7 (Potential Energy and Total Mechanical Energy) Due: Oct. 13	<u>Experiment 5</u> <i>Work and Energy</i> Computer Based in room 2279
8 Oct. 11	<u>Chapter 8</u> 8.1 to 8.5	<u>Momentum, Impulse and Collisions</u> Momentum and Impulse Conservation of Momentum Elastic and Inelastic Collisions Center of Mass	Online HW 8 (Momentum, Impulse, and Collisions) Due: Oct. 20	<i>Lab Make-up Session</i>
9 Oct. 18	<u>Chapter 9</u> 9.1 to 9.5	<u>Rotation of Rigid Bodies</u> Angular Velocity and Acceleration Rotation with Constant Angular Acceleration Linear and Angular Kinematics Energy in Rotational Motion Parallel-Axis Theorem	Online HW 9 (Rigid Body Rotation) Due: Oct. 27	<u>Experiment 6</u> <i>Collisions</i> Computer Based in room 2279
10 Oct. 25	<u>Chapter 10</u> 10.1 to 10.4 <i>Review for Exam 2</i>	<u>Dynamics of Rotational Motion</u> Torque Rigid-Body Angular Acceleration Rigid-Body Rotation about a Moving Axis Work and Power	Online HW 10 (Angular Dynamics I) Not graded	<u>Experiment 7</u> <i>Rotations</i> Computer Based in room 2279
11 Nov. 1	<u>Chapter 10</u> 10.5-10.7 <i>Exam 2</i> <i>Nov. 3</i> <i>6-8 PM</i>	<u>Dynamics of Rotational Motion</u> Angular Momentum Conservation of Angular Momentum Gyroscopes and Precession	Online HW 11 (Angular Dynamics II) Due: Nov. 10	<i>No Lab Scheduled</i>

12 Nov. 8	<u>Chapter 11</u> 11.1 to 11.5	<u>Equilibrium and Elasticity</u> Conditions for Equilibrium Center of Gravity Rigid-Body Problems Stress, Strain and Elastic Moduli Elasticity and Plasticity	Online HW 12 (Equilibrium) Due: Nov. 17	<u>Experiment 8</u> <i>Conservation of Angular Momentum</i> Standard Experiment in room 2108
13 Nov. 15	<u>Chapter 12</u> 12.1 to 12.8	<u>Gravitation</u> Newton's Law of Gravitation Weight Gravitational Potential Energy The Motion of Satellites Kepler's Laws Spherical Mass Distribution Apparent Weight and the Earth's Rotation Black Holes	Online HW 13 (Gravitation) Due: Nov. 24	<i>Lab Make-up Session</i>
14 Nov. 22 <i>Nov. 25-26 is a holiday (no class)</i>	<u>Chapter 13</u> 13.1 to 13.8	<u>Periodic Motion</u> Describing Oscillations Simple Harmonic Motion Energy in SHM Applications of SHM The Simple Pendulum The Physical Pendulum Forced Oscillations and Resonance	Online HW 14 (Periodic Motion) Due: Dec. 1	<i>No Lab Scheduled</i>
15 Nov. 29		Complete Unfinished Material Review for Final Exam		<u>Experiment 9</u> <i>Simple Harmonic Motion</i> Computer Based in room 2279