

General Physics I (V85.0011) Course Information Fall 2006

Lecturers:

Section 1

M & W, 9:30 - 10:45 AM

Professor Burton Budick

Office: Room 705 Meyer

E-Mail: burton.budick@nyu.edu

Telephone: 212-998-7683

Office Hour: See Blackboard

Section 2

M & W, 11:00 - 12:15 PM

Professor Andre Adler

Office: Room 903A Silver

E-Mail: andre.adler@nyu.edu

Telephone: 212-998-7802

Office Hour: See Blackboard

Section 3

M & W, 7:00 - 8:15 PM

Professor David Hogg

Office: Room 501 Meyer

E-Mail: david.hogg@nyu.edu

Telephone: 212-992-8781

Office Hour: See Blackboard

Pre-requisite: Calculus I

Lectures: Meyer Hall of Physics, Room 121

Laboratory: Meyer Hall of Physics, Room 224

Recitation: Meyer Hall of Physics, Room 261

Text: The textbook is a custom package made up of "University Physics, Extended Version with Modern Physics" by Young and Freedman, 11th edition, and "Student Workbook with Modern Physics" by Randall D. Knight.

Laboratory Manual: (i) *General Physics I Lab Manual* and (ii) Science Workshop Manual (for computerized experiments. It is available at no charge in the Physics Department office, Meyer 424.)

General Information: This course is an introduction primarily to mechanics and thermal physics. It will introduce to most of you a new way to think about your world. The predictive aspect of physics rests on a quantitative approach. Therefore, you must have at your fingertips high school algebra, geometry, and trigonometry. You must know differential calculus, which will be used from time to time in class, but sparingly on exams, and elementary integral calculus. Mastery of algebra, trigonometry, and the facts of geometry is absolutely essential. If you need to review any of this mathematics, do so immediately.

Appendix B in your text covers the necessary material.

The class work includes lectures, recitations, and laboratories. Each week there are two lecture sessions, a recitation session, and a lab session. The lectures are devoted to discussing and clarifying text material, to working illustrative problems, and to demonstrating physical principles and their applications. Your experience will be most rewarding if you read the assigned text material before coming to lecture. You may not understand all the material, but a prior reading will help you focus attention on the portion of the lecture that covers it. As soon after lecture as possible, study the text again and the notes you took in class.

A copy of this syllabus is posted on the General Physics I Blackboard website which you may access through your NYU Home account.

Using The Text: Study the relevant sections of the text before the lecture. Try doing the examples worked out in the text *before* looking at the solutions. If you have understood the material you should be able to do this. This will also give you valuable experience in problem solving. Analyze the Discussion Questions at the end of the chapter. These are not assigned, but are a good way to acquire the concepts of the course. If you have any uncertainty about a Discussion Question, bring it up in recitation. Studying and understanding the diagrams in the text is in our experience a most valuable learning method.

Homework Problems: You will find homework assignments for each week on the last page of this syllabus. Homework is to not be handed in to your instructor. Doing the homework problems is probably the single most important activity in mastering physics. Solutions to all of the homework problems are found on the class Blackboard website. It is recommended that you work on the problems first and then compare your results with that posted on Blackboard.

Recitations: Beginning the second week of the term (the week of September 11), your recitation section meets once a week. There is good evidence that students often learn more by working in small groups where they actively discuss problems. The recitation will be the place where you engage in group work, using the workbook that came bundled with your textbook. You must bring your workbook to each recitation. You will be informed of the specific assignment in recitation. *Note that if you come to recitation without your workbook, you will lose half the credit you would have earned on that assignment.* Missed recitation assignments cannot be made up at a later date during the semester, nor can you attend a recitation section that you are not registered for. You must attend the recitation section in which you enrolled.

Sheets in the workbook are perforated so that at the end of the recitation period you will tear out the assigned worksheets, put your name on them and staple them together. Your recitation grade will be based on this group work. **Late workbook assignments will not be accepted.** A stapler will be in the recitation room for your convenience. The worksheets will be graded and returned to you at the next meeting of your recitation section. To account for different grading scales by different instructors, the average grade for each recitation section will be normalized to 90%.

Any time remaining in the recitation after the workbook assignment has been completed can be devoted to going over the homework problems, but the solutions to all homework problems will be posted on Blackboard.

Laboratory: Beginning the second week of the term (the week of September 11), your laboratory section meets once a week. You must attend the laboratory section in which you enrolled. The laboratory is an essential part of this course. If it is not completed satisfactorily, the final grade for the entire course will be incomplete (or F). A grade of I, if assigned, resulting from incomplete lab work cannot be made up before the following summer or fall term, when laboratories are scheduled again. Your ten best labs will be counted towards your lab grade.

You must participate in every laboratory session, complete all the experiments, and submit satisfactory reports on them. You may be excused from the lab only upon presentation to your lab instructor of a proper medical note from your attending physician saying that you were too ill to participate. Without such a note, a grade of zero will be recorded for the experiment. With such a note, the instructor will enter a grade of "Excused". If you miss more than two experiments, or fail to hand in more than two reports, whether excused or not, your grade for the course will be I (or F). To complete the lab requirement, you must complete the entire set of labs, not just the ones you missed. This can be done in the following summer session or in the next academic year, space permitting. To account for different grading scales by different instructors, the average grade for each lab section will be normalized to 90%.

Your lab instructor will give you full instructions on what you are expected to do in the laboratory and how to write lab reports. Lab reports are to be handed in to your lab instructor at the beginning of the lab session one week after the experiment. Each student should take an active role and gain "hands on" experience. A graded report will be returned to you in one week. If a report is submitted late, credit will be deducted from the grade.

You must be familiar with the experiment BEFORE coming to the lab: The lab session is short, so you will waste precious time if you do not read the lab description carefully and think about the goals of the lab. Your lab instructor may give the class a short quiz on the material at the beginning of the session. Even when working in teams, everyone must participate in doing the experiment. Everyone must take data, and each person's data sheet must be signed and dated by the lab instructor before leaving the lab.

That signed and dated sheet must be submitted with the lab report. The emphasis in reports should be on the measurements made, their analysis, and their interpretation. A substantial part of the grade will be based upon the instructor's observation of the level of your participation during the laboratory.

Repeating the Course and Labs: If you are repeating the course and have a satisfactory grade in the lab, you may skip the lab in this course and use your previous lab grade. Notify your professor and **Bill LePage** in the Physics office, Meyer 424. His email address is wlp1@nyu.edu and his phone number is 998-7704. You must still register for a lab section.

Tutoring: Free tutoring is available from the Teaching Fellows associated with this course. A schedule is available in the physics office (room 424).

College Learning Center: Additional assistance for this class is available to you free of charge at the College Learning Center (CLC) located on the 1st Floor of Weinstein Hall (right behind Java City). For information on one-on-one and group peer tutoring, please stop by the CLC or go to their website: <http://www.nyu.edu/cas/clc/>

Term Exams: There are 3 multiple-choice exams during the term (not including the final exam.) The exams are on the Fridays indicated in the attached course schedule. These exams begin at 1:20 P.M. and end at 3:10 P.M. The room for your exam depends on the first letter of your last name. The room assignments are below.

First letter of Last Name	Room for Term Exams
A-G	703 Silver
H-K	713 Silver
L-N	714 Silver
O -S	121 Meyer
T-Z	122 Meyer

The average for your term exams is computed from your best two term exams. The two exams with the highest scores will be averaged together to determine each student's exam grade. If you do not take a term exam it will be counted as a zero and your grade will be computed using the other two term exams. No make-up exams will be given. No alternative arrangements for student athletes taking the exam at another location will be made.

All exams are closed book and notes are not permitted. Important constants and formulae will be given.

You will need to use a non-programmable hand calculator on the exams. If you already possess a programmable calculator you can use it, but you can't use any information stored in the calculator's memory. You cannot use any communication device, such as a cell phone, that has a calculator built into it. Please check your calculator before the exam to see that it works.

Final Exam: The final is cumulative and multiple choice. Rooms will be the same. You must take the final exam unless a note from a physician is presented within 48 hours of the exam. If such a note is presented, a grade of I is assigned if your grade for the course is passing up to that point. Otherwise a grade of F is assigned.

Exam Sign Out When you have finished an exam, please give it to a proctor, show your I.D. and sign the roll sheet.

Past Year's Exams will be posted on Blackboard. There is no guarantee that this year's exams will be

similar. No other practice exams will be issued. If you wish further practice, do some of the unassigned problems in the text. Answers to odd-numbered problems are given in the back of the text.

Final Grade Your “course average” is computed from your term average (40%), final exam (40%), lab average (10%) and recitation average (10%).

A median course average is equivalent to a letter grade of B-.

Continuing to General Physics II requires a grade of C- in General Physics I.

Notice for Students who will continue on to General Physics II in the Spring 2007 semester

The second exam for General Physics II is Friday March 9, 2007. This is the last Friday before Spring Break so please plan accordingly so that you are available for all examinations. We cannot offer you a different time to take this examination.

Date	Lab	Chapter	Topics
W Sept. 6	No lab nor recitation	1.1-1.8	Uncertainty and Significant Figures, Estimates and Orders of Magnitudes, Vectors and Vector Addition
M Sept. 11 W Sept. 13	Motion 1	2.1-2.5 3.1-3.2	1-Dimensional Motion Position, Velocity and Acceleration Vectors
M Sept. 18 W Sept. 20	Motion 2	3.3-3.4 4.1-4.3	Projectile Motion, Motion in a Circle Newton's First and Second Laws
M Sept. 25 W Sept. 27	Equilibrium	4.4-4.6 5.1-5.2	Mass and Weight, Newton's Third Law, Free-Body Diagrams Statics and Dynamics
M Oct. 2 W Oct. 4	Newton's Second Law	5.3-5.4 1.9-1.10 6.1-6.4	Frictional Forces and Circular Motion Unit Vectors and Scalar Products Work and Kinetic Energy
F Oct. 6			1st Exam 1:20-3:10 PM
M Oct. 9 W Oct. 11	No lab nor recitation on Monday Work-Energy T to R	7.1-7.4	<i>No class</i> Potential Energy and Conservation of Energy
M Oct. 16 W Oct. 18	Work-Energy M Conservation of Energy T to R	8.1-8.3 8.4-8.5	Momentum and Collisions Impulse, Center of Mass
M Oct. 23 W Oct. 25	Conservation of Energy M Collision in One Dimension T to R	9.1-9.4 1.10 10.1-10.4	Rotational Motion Vector Products Dynamics of Rotation
M Oct. 30 W Nov. 1	Collision in One Dimension M Ballistic Pendulum T to R	10.5-10.6 11.1-11.3	Angular Momentum Equilibrium
F Nov. 3			2nd Exam 1:20-3:10 PM
M Nov. 6 W Nov. 8	Ballistic Pendulum M Centripetal Force T to R	11.1-11.3 11.4-11.5	Equilibrium Stress, Strain; Elasticity
M Nov. 13 W Nov. 15	Centripetal Force M Rotational Motion T to R	12.1-12.3 12.4-12.5	Gravitation Motion of Satellites; Kepler's Laws of Motion
M Nov. 20 W Nov. 22	Rotational Motion M No Lab nor recitation T to R	13.1-13.3 13.4-13.5	Periodic Motion Simple Harmonic Motion
M Nov. 27 W Nov. 29	Oscillations of a String	15.1-15.4 15.5-15.8	Mechanical Waves; wave speed Energy in Wave Motion; Wave Interference; Normal Modes
F Dec. 1			3rd Exam 1:20-3:10 PM
M Dec. 4 W Dec. 6	Resonance Tube	16.1-16.4 16.5-16.8	Sound Waves; Intensity Interference; Beats; Doppler Effect
M Dec. 11 W Dec. 13	No lab nor recitation	14.1-14.3 14.4-14.5	Fluid Statics Fluid Dynamics
T Dec. 19			Final Exam 12:00-1:50 PM

M = Monday, T = Tuesday, R = Thursday

T to R = Tuesday to Thursday

Note: Recitation and lab meets Monday, November 20, but there are no labs nor recitations meeting on Tuesday, Wednesday, and Thursday of that same week.

Chapters are listed in the order they will be covered in lecture. All solutions to these problems can be found on Blackboard.

Chapter	Problems
1	14, 16, 24, 41, 43, 47, 48, 51, 55, 58, 64
2	11, 31, 33, 34, 35, 46, 69, 76
3	9, 18, 32, 54, 58, 60, 71
4	4, 17, 20, 24, 26, 30, 39, 43, 49
5	11, 15, 24, 39, 60, 61, 62, 63, 84, 85, 90, 104
6	14, 27, 28, 46, 62, 70, 82, 93
7	9, 18, 42, 46, 55, 65, 74
8	8, 19, 27, 36, 70, 78, 79, 88
9	2, 10, 15, 22, 26, 41, 83, 85
10	2, 6, 10, 27, 34, 37, 40, 43, 44, 63
11	12, 14, 21, 22, 29, 31, 49, 67, 68, 78
12	5, 15, 23, 32, 53, 73
13	15, 24, 41, 43, 74, 80, 96
15	3, 6, 16, 22, 26, 28, 32, 36, 42
16	6, 7, 22, 23, 26, 27, 32, 40, 43
14	14, 21, 24, 25, 34, 35, 37, 65, 80, 86