PHYS 110 Course Syllabus Prof. Varley spring 2012

Topics Covered: This is the first semester of a two semester introductory physics course without calculus and this course is appropriate for pre-professional students (pre-med, physical therapy etc) and some majors (Biology, Chemistry, etc.). Kinematics, dynamics, Newton's laws of motion and gravitation, momentum and energy conservation, rotational motion, circular motion, vibrational motion, the laws of thermodynamics, and kinetic theory of matter will be covered.

Instructor: Prof. Varley **Office**: Room 1216 HN. 2012varley110@gmail.com 212-772-5252. Office Hours: Tues. 8:30-9:00PM & Thurs 4:30-5PM
Should you wish to contact me via email, use the address above. You must use a valid Hunter College email address and include PHYS110 in the subject. Otherwise my spam filter might reject your email.

Course Schedule: There are two weekly lectures scheduled on Tuesdays and Thursdays and a recitation class is scheduled on Thursday after the lecture. The recitation time will sometimes be used for lectures and also exams will be given during the recitation class. On occasion problem solving will be done during the scheduled lectures so the recitation and lectures scheduled are to be considered required and necessary parts of this course.

Grading: Highest of two midterm exams.....40% Final Exam 40%
PHYS 110 Laboratory..... 15% PHYS 110 Recitation Attendance 5%

You must be registered for ALL THREE: **PHYS 110.LC** (lecture), **PHYS110.RC**, (recitation) and **PHYS110.LB** (lab) to receive a grade in PHYS 110. To repeat, the Physics Laboratory associated with PHYS110 is required and lab grade will count 15% credit toward your course final grade. If you do not take the lab, you will receive and INC grade for this course. Registration for the recitation part of the course is also required and attendance in PHYS110.RC will count 5% toward the final course grade.

Mathematics Pre-requisite: Algebra, geometry, and trigonometry are prerequisites of PHY 110. There is very little trigonometry you need to know. However, students with a poor mathematical background (especially algebra and geometry) do NOT do well in this course. If you do not have the necessary mathematics background, it is recommended so obtain it before proceeding with PHYS110. The pre-requisite course is MATH 125. Check the appendix of Giancoli for a good idea of what mathematics background is required for PHYS 110.

PHYSICAL SCIENCES LEARNING CENTER: The Department of Physics and Astronomy maintains the Physical Sciences Learning Center in conjunction with the Chemistry Department. This to students of PHYS 110. You will almost certainly find a fellow PHY 110 student there with whom you can work. There also will be undergraduate and graduate physics students who can be of help to you.

■ WITHDRAWALS, INCOMPLETES, CREDIT/NO-CREDIT GRADES are severely restricted.

Withdrawal grade *must be requested* by roughly seventh week of the semester; check with the academic calendar at the Registrar's Homepage for the cutoff date. A withdrawal with a grade "W" assumes that you are passing the course at the time your request the withdrawal. The request for a W grade must be approved by the department chairperson by the time the final grades are submitted.

A grade of **Incomplete** is only given to a student who cannot complete the requirements of the course due to a major problem *that is adequately documented*. If the final exam is missed, the exam will be made up at the convenience of the instructor. Usually a student is required to makeup the final exam by taking a different instructor's final exam at the end of the following semester. No incomplete grades are given to students who are failing the course.

Credit/No Credit: The credit/no credit system was originally instituted to encourage students to take courses outside their major field as a means for broadening the student's background without penalizing the student. Credit/No Credit is NOT a possible grade for the pre-professional program. If you wish to take the credit/ no credit option, then you must give the instructor the filled out form **no later than** the last day of class. Under no circumstance will credit/ no credit forms be accepted the day of the final exam

■ Exams

Last Class: Tues May 15, 2012. **Final Exam**: Thursday, May 24, 2012 ***6:20-8:20PM.*** The final exam covers the entire semesters work of this course.
No Makeup Exams: The HIGHEST of the TWO midterm exams will be used to compute your course grade. There will be NO makeup exams given for the midterm exams. If you miss a midterm exam, then the other exam will count toward your final grade. (If you miss both midterm exams, then a zero will count toward your final mark.) If you miss the final exam, due to illness you must provide a doctor's note explaining you illness. If you miss the final exam, you be given an ABS grade provided your class average is C or better. You will take a makeup final exam that will be a departmental exam and this will be given during the final exam period in December 2012.

■ Recommendation Letters

Letters of recommendation for good PHYS110 students *after the work for the semester is completed*. It is recommended the student get a copy of the recommendation form supplied by the Pre-Professional Office as other considerations than pure academics are involved. For example, the instructor is asked describe the "student's maturity". You must waive your right to read the recommendation letters and additionally authorize the instructor to disclose their grades before a letter of recommendation will be written.

■ Important Suggestions to Improve Your Chances for Success in PHYS 110

1. You will NOT get a good grade unless you study regularly and frequently throughout the semester. Cramming before an exam will not result in a good grade.
2. PHYS 110 requires a HUGE amount of work on your part for you to be successful. Do not sign up for too many other courses this semester. If you have personal problems that will take a lot of your time, withdraw from PHYS 110 until you have more time available to study.
3. It is STRONGLY RECOMMMENDED you study in a group of three to five students and take turns working out and explaining the material to each other. Experience has shown that group studying students have a greater chance of success. This works best if you have students with differing abilities in your group. The instructor can give you only limited help since there are so many students registered for this class.
4. THE ABOVE PROBLEMS WILL NOT GO AWAY BY THEMSELVES. If you see yourself as having a problem, get help at the Physical Sciences Learning Center Room 1209 Hunter North and/or work with a private tutor. The beginning material must be learned immediately since the rest of the course builds on material learned throughout the semester.

■ General Description and Outline of the PHYS 110 Course

PHYS110 is primarily about the description and prediction of the motion of objects. You already have considerable experience predicting motion from everyday life. For example, in sports you often predict the motion of a ball and this prediction is done quickly and intuitively based on your past experience. You also undoubtedly travel and experience has taught you certain relations between speed (velocity), distance, and time. What you will learn in this course will formalize what you already know; however, you probably also come into this course with some misconceptions and hopefully these will be addressed and corrected.

The main concepts we will introduce, such as velocity, speed, acceleration, force, momentum, and energy, are already part of your vocabulary. However, you probably do not have a precise definition for these quantities and this course will fix this. More importantly, your intuition of how these quantities behave and how they are related may be incorrect. Many people have what is known as a pre-scientific or "Aristotelian" picture of the world. This point of view has been discarded by scientists in favor of the theory of motion developed by Galileo, Newton, and others. This more modern point of view is accepted because it gives an explanation of many more physical situations. The course first begins by describing of motion of only one object and in only the simplest cases possible. Then we discuss the complications of rotation that occur in extended objects. Next we consider systems having many interacting objects and lastly we find out there are simplifications that occur in the physical description of systems with huge number of objects such as gases and liquids.

Mathematics is the language used by physicists in describing nature so it is important you have the necessary background. The pace of this course is quite rapid so it is also important that you allow yourself enough time to study the course materials. What works best is an set amount of study time each day as opposed to a concentrated effort just before the exams. It is crucial that you do homework and example problems as something them will appear as exam problems.

■ Course Textbook: "Physics" by D. Giancoli 6th edition.

Chapters 1-15 inclusive are covered in PHYS 110 especially the sections indicated below:
Chap 1: Introduction (all sections)
Chap 2: Describing Motion (all sections)
Chap 3: Kinematics in two dimensions (all sections)
Chap 4: Motion and Force: Dynamics (all sections)
Chap 5: Circular Motion (all sections)
Chap 6: Work and Energy (all sections)
Chap 7: Linear Momentum (all sections but 7, 9, 10)
Chap 8: Rotational Motion (all sections but 3, 9)
Chap 9: Bodies in Equilibrium (sections 1-3 only)
Chap 10: Fluids: (sections 1, 2, 6)
Chap 11: Vibrations and Waves (sections 1-9, 11, 12)
Chap 12: Sound (sections 1, 7, 8)
Chap 13: Temperature and Kinetic Theory (sections 1-3, 7-11, 15)
Chap 14: Heat (sections 1-6)
Chap 15: Thermodynamics (sections 1, 2, 4-12)

■ Ethics and Cheating

Hunter College regards acts of academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The college is committed to enforcing the CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedure. Additionally, it is considered unethical to bring to your instructor's attention the possible impact of your PHYS111 grade on your future plans, including graduation, scholarships, and jobs. The instructor may exercise his option to withdraw you from the course if he thinks you are compromising his ability to assess your work independently of any other consideration. Students found to be involved in academic dishonesty, including using somebody else's notes will be removed from the class and a grade of "E" for the course will be submitted to the registrar. The student will be advised to repeat the course with another professor, possibly at another institution. This is the least action taken. Further, more serious actions may be taken if the situation indicated that such actions are appropriate.