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January 5, 2015
TAs: Z. Yang, B. Flores

Physics 110
Intro to Physics I

- **Where:** 343 Alumni
- **When:** 6:00 pm -7:20 pm, Monday and Wednesday
- **Textbook:** "Physics", 9th Edition by John D. Cutnell and Kenneth W. Johnson, ISBN 978-0470879528.
- **Homework:** Several on-line problems assigned every week. The homework will be due approximately one week after problems become open.
- **Mid Terms:** There will be 3 1.25 hour long mid-terms given during the semester. Only 2/3 will be used for your final grade - the lowest score will be dropped.
- **Final:** The final is cumulative.
- **Grade Breakdown:**
  → 2 (out of 3) Mid Term Exams = 40% (20% each)
  → Weekly Homework = 15%
  → Recitations = 10%
  → Cumulative Final Exam = 35%
  To ensure uniformity of evaluation among sections taught by different instructors, a guideline has been set by the Department of Physics and Astronomy. This guideline informs the instructor of the acceptable range for the number of A+ to B- grades relative to the total number of grades, A to F. In general Students who score ∼93% or more may expect an A, and students who score ∼45% or less may expect an F.
- **Office Hours:** Monday and Wednesday 1:30-2:30pm. However, if my door is open and I'm not in the middle of something I'll be glad to talk to you. One could also setup an appointment if needed.
- **Website:** Standard Courseweb site (**2154_PHYS_0110_SEC1200_INTRODUCTION TO PHYSICS 1**): At this site you'll find all class materials – homework assignment link, exam dates, topic for lecture period, and anything else I think may be useful.

Course Description:

This 3-credit course is the first term in a two-term lecture-demonstration sequence that presents the elements of both classical and modern physics. The emphasis of the course is on a clear understanding of the underlying principles (algebra-based) rather than on mathematical formalism and problem-solving (although some attention is given to these aspects of physics). The study of Physics allows a small set of principles allows to make predictions on a wide range of natural phenomena. Physiological and biological processes

obey physical principles, and current medical technology is rooted in the laws of Physics. The phenomena that you will explore in this course include: translational motion, rotation, collisions, vibrations, mechanical waves, properties of fluids and gases, and heat transfer. One learning goal is to identify and correctly apply Physics principles to real-life situations and problem solving. Another important goal is competence in the use of scientific reasoning. You should be equipped with basic algebra and trigonometry skills. Other mathematical tools will be introduced sparingly during the term when and if needed.

Recitations:
Sections meet once per week. These sessions are taught by a graduate Teaching Assistant and provide students with the opportunity to ask questions about the lecture material or the homework and to work out sample problems in a small-group setting. The TA's maintain a recitation grade based on participation and quizzes that they administer. The graduate teaching assistants this term are:
Z. Yang (ziy8@pitt.edu)
B. Flores (blf40@pitt.edu)

Homework:
Homework is assigned each week. The homework is electronic and the current homework assignment is available from WebAssign. A problem set will be assigned online through WebAssign (http://www.webassign.com/), unless announced otherwise. You will typically have a week to complete the assignment. To set up an account for this course, use the above link, hit "I have a Class Key", type class key pitt 4691 8122 (section 1200), and follow screen prompts. When registering, you must use your full name (no nicknames). Each problem in WebAssign is generated uniquely for each student, so the problems assigned to you will be similar but not identical to those assigned to another student in your class.

Exams:
There will be two graded midterm exams (2 highest scores out of the 3 given), with each worth 20% of your course grade, and a cumulative final exam worth 35% of your course grade. Exams will contain a mix of conceptual questions and quantitative problems, with an average difficulty comparable to the problems from your homework and recitations. A missed midterm exam will result in a zero score and will by default be the exam you drop out of the three. In the case of the final or possibly missing two midterms only a medical emergency (or serious condition) occurs on (or persists through) the date of an exam will be considered. The student however must communicate the situation to the instructor no more than 24 hours after the exam time, and he/she may be excused by bringing a signed physician note certifying the inability of that student to do any schoolwork on that date. Other kinds of emergencies or truly exceptional circumstances will be evaluated by the instructor on a case-by-case basis. If an schedule conflict is anticipated, the student must communicate that to the instructor as early as possible in the term, and reasonable accommodations will be sought. Last minute notice of a schedule conflict will make the student ineligible for accommodations.

Approximate Class Schedule
(The midterm dates are FIXED):

WEEK	TOPIC
January 5,7	Units, dimensional analysis, vectors, 1-D kinematics
January 12,14	Free fall, 2-D kinematics, Newton's laws of motion
January 21	Forces: application of Newton's second law
January 26, 28	Uniform circular motion; work and energy;
February **2*,**4	Conservation of mechanical energy, impulse, momentum, collisions; ***Exam 1**
February 9,11	Rotational kinematics, torque, moment of inertia, rotational statics
February 16,18	Rotational dynamics, rotational energy, angular momentum
February 23,**25***	Oscillations: springs; oscillations: pendulum; ***Exam 2**
March 2,4	Elastic energy, stress and shear deformation, pressure
Week of March 9	**Spring Break**
March 16,18	Pascal's principle, Archimedes' principle, ideal fluid flow, viscous flow
March 23,25	Temperature, thermal expansion, heat and phase changes, humidity
March 30, **April 1***	heat conduction; heat radiation; ***Exam 3**
April 6, 8	Waves, speed of transverse wave, speed of sound, intensity. Doppler effect
April 13,15	Constructive/destructive interference; diffraction; standing waves
Week of April 20	**Finals Week** (Specific Day/Time TBA)

Study Resources:
The department of physics and astronomy maintains a resource room and exploration center for the benefit of the students in the introductory courses. They are both accessible through room 312 on the third floor of Thaw Hall. The room is staffed with graduate teaching assistants, all of whom are knowledgeable about the materials presented in this course. Students can meet with the instructor or with one of the graduate teaching assistants during their office hours, and are especially encouraged to do so if they encounter difficulties understanding the material.

Course Policies:
• Academic Integrity:

Students in this course will be expected to comply with University of Pittsburgh's Policy on Academic Integrity. Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to, the confiscation of the examination of any individual suspected of violating University Policy. Furthermore, no student may bring any unauthorized materials to an exam, including dictionaries and programmable calculators. The University Guidelines on Academic Integrity, available at: http://www.provost.pitt.edu/info/acguidelinespdf.pdf

• Disabilities:

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and Disability Resources and Services (DRS), 140 William Pitt Union, (412) 648-7890, drsrecep@pitt.edu, (412)228-5347 for P3 ASL users, as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

• Classroom recording:

To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use.