

PHYS 0174 (CRN: 10588)

Basic Physics for Science and Engineering 1

Session I Summer 2019

Course Information

Class: 104 Thaw Hall; Mo/We 6:00 – 9:00 PM and Tu/Th 6:00 – 7:55 PM
Recitation: 104 Thaw Hall; Tu/Th 8:00-9:00 PM
Textbook: *Fundamentals of Physics* by Halliday, Resnick and Walker (11th, 10th or any other recent edition)
Prerequisites: High school algebra and trigonometry; Math 0220 is a co-requisite for Physics 0174

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Office hours: Monday to Thursday 4:00 – 5:00 PM (or by appointment)

TA: Chi Wing Ng; chn43@pitt.edu; OEH 109A Desk#1

Course Description and Objectives (see also detailed objectives posted separately!)

Physics 0174 is the first term of a two-term calculus-based introductory lecture-demonstration sequence in physics primarily for students intending to major in a field of science or engineering. Calculus is used as needed, and should be taken at least concurrently. Topics include: kinematics, Newton's Laws of Motion, work, kinetic and potential energy, conservation of total mechanical energy, linear momentum, conservation of total linear momentum and analysis of collisions, rotational kinematics and dynamics, motion of rigid bodies, conservation of angular momentum, elasticity, gravitation, simple harmonic motion, waves and sound. There is a laboratory course associated with Physics 0174/0175, Physics 0219, which should be taken after Physics 0174.

A student will be able to...

1. Demonstrate conceptual understanding of the concepts, principles and laws of physics covered in this course, which include: kinematics, Newton's Laws of Motion, work, kinetic and potential energy, conservation of total mechanical energy, linear momentum, conservation of total linear momentum, rotational kinematics and dynamics, rigid body motion, conservation of angular momentum, elasticity, gravitation, simple harmonic motion, waves and sound.
2. Describe a physical situation, as necessary, using multiple representations such as written conceptual statements, mathematical equations, diagrams, and graphs, and be able to translate from one representation to another.
3. Perform a conceptual analysis of a problem and identify physical principles required for its solution.
4. Translate physical principles to formulate necessary mathematical statements required to solve a problem.
5. Apply mathematical concepts and methods such as algebra, differentiation, integration, trigonometry, and vector analysis as necessary to analyze and solve problems.

Tentative Schedule (subject to change):

Lecture	Date	Chapter	HW Due
1	May 13 (Mo)	1 + 2	
2	May 14 (Tu)	3	1
3	May 15 (We)	4	2
4	May 16 (Th)	5	3
5	May 20 (Mo)	6	4
6	May 21 (Tu)	7	5
7	May 22 (We)	7+8	6
8	May 23 (Th)	8	7
	May 27 (Mo)	Memorial Day	
	May 28 (Tu)	Exam 1 (ch 1-6)	
9	May 29 (We)	9	8
10	May 30 (Th)	9	9
11	June 3 (Mo)	10	10
12	June 4 (Tu)	10+11	11
13	June 5 (We)	11	12
14	June 6 (Th)	12	13
	June 10 (Mo)	Exam 2 (ch 7-12)	
15	June 11 (Tu)	13	14
16	June 12 (We)	13+15	15
17	June 13 (Th)	15	16
18	June 17 (Mo)	16	17
19	June 18 (Tu)	16+17	18
20	June 19 (We)	17	19
	June 20 (Th)	Exam 3 (ch 13-17)	

Since this is a Summer course, the material will be covered quite fast and you will need to work very hard to keep up. If you do not have the time to commit, you should not take the class at an accelerated rate over the Summer. I will not accommodate vacations, extended illness, or job commitments. If anything causes you to miss substantial class time, you should strongly consider dropping the course as soon as possible. For reference, the add/drop period ends May 15, 2019 and the deadline for submitting monitored withdrawal form to the dean's office is June 7, 2019.

Class Etiquette

Phones and all other electronic devices must be silenced during class. In addition, students are expected to refrain from texting. Laptops, tablets, and smart phones may be used for note taking or reference purposes only. Watching videos, playing games, or browsing the internet is not appropriate during lectures and recitations.

Be courteous to your class mates. Carrying on a conversation, habitually coming in late or leaving early, or misusing technology are disruptive to the class. Students who fail to show common courtesy will be asked to leave.

Course Grades

Your grade in this course will be based on homework assignments (20%), recitation quizzes (15%), participation (5%), and three exams (20% each). I reserve the right to implement a curve to calculate the final scores and course grades if deemed necessary by circumstances.

Exams: There are three (3) exams each covering a subset of the materials. The first 2 exams are scheduled for the first day of the week so you will have a long weekend to prepare for the exams. The last exam is on the last day of class. If you miss an exam you may not be allowed to take a makeup.

Homework: Problem solving skills are very important to learning and understanding physics, and so homework is an essential part of this course. In order to avoid confusion in case you have an older version of the textbook, all the problems from the textbook will be posted in courseweb and I will tell you after each class which problems you have to solve as homework. Each homework set is due the next class, however homework assigned a day before an exam will be due the day after the exam. Late homework submitted one day after the due date is subject to a 25% penalty. No homework is accepted beyond that.

Recitations: You are expected to attend recitations on Tuesdays and Thursdays following the lecture. The recitations will be held by the TA. There will be a short quiz at the beginning of most recitations to gauge your understanding of the material. The rest of the time will be used to discuss homework problems, go over additional problems, and review material covered in the class.

Courseweb

The University of Pittsburgh provides an online portal for classes called Courseweb. Here you will find relevant course material such as a copy of the syllabus, lecture slides, homework problems. You may also view your grades online through this site: <http://courseweb.pitt.edu>

Grade Change Policy

Grade cutoffs are chosen to be as fair as possible but ultimately the line has to be drawn somewhere and it has to be drawn straight. Extra credit opportunities will not be offered to individual students. Once your final grade for the semester has been submitted to the Registrar it will not be changed unless there is a verifiable error, such as a missing score or a score that was entered incorrectly. You can check all of your scores at any time on Courseweb (<http://Courseweb.pitt.edu/>).

Academic Integrity

All students are expected to adhere to the standards of academic honesty. Any student engaged in cheating, plagiarism, or other acts of academic dishonesty would be subject to disciplinary action. 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 (<http://www.provost.pitt.edu/info/acguidelinespdf.pdf>). This may include, but is not limited to the confiscation of the examination of any individual suspected of violating the University Policy.

Disability Services

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, 216 William Pitt Union, (412) 648-7890/(412) 383-7355 (ITY), as early as possible in the term, DRS will verify your disability and determine reasonable accommodations for this course.

Statement on 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.