PHYS 0174 (CRN: 10558)
Basic Physics for Science and Engineering 1
Session I Summer 2020

Course Information

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

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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 11 (Mo)	1 + 2	
2	May 12 (Tu)	3	1
3	May 13(We)	4	2
4	May 14 (Th)	5	3
5	May 18 (Mo)	6	4
6	May 19 (Tu)	7	5
7	May 20 (We)	7+8	6
8	May 21 (Th)	8	7
	May 25 (Mo)	Memorial Day	
	May 26 (Tu)	Exam 1 (ch 1-6)	
9	May 27 (We)	9	8
10	May 28 (Th)	9	9
11	June 1 (Mo)	10	10
12	June 2 (Tu)	10+11	11
13	June 3 (We)	11	12
14	June 4 (Th)	12	13
	June 8 (Mo)	Exam 2 (ch 7-12)	
15	June 9 (Tu)	13	14
16	June 10 (We)	13+15	15
17	June 11 (Th)	15	16
18	June 15 (Mo)	16	17
19	June 16 (Tu)	16+17	18
20	June 17 (We)	17	19
	June 18 (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 13, 2020 and the deadline for submitting monitored withdrawal form to the dean's office is June 5, 2020.

Course Grades

Your grade in this course will be based on homework assignments (25%), recitation quizzes (15%), and three exams (20% each). An additional 5% extra credit will be awarded for participation and possibly other activities. 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. Homework will be administered online using WileyPlus. Each homework set is due at the start of the next class. However, homework assigned a day before an exam will be due the day after the exam. Homework submitted a day after the due date is subject to a 20% penalty. No late submission will be accepted after that.

Recitations: You are expected to attend recitations on Tuesdays and Thursdays following the lecture. The recitations will be held by your 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.

Canvas

We will use the new Learning Management System, Canvas, for this class: **https://canvas.pitt.edu** You will find all relevant course materials such as the syllabus, lecture slides, homework and other assignments posted there. You may also have to do or upload your assignments through/to the site.

Zoom

Because of the continuing COVID-19 pandemic, all lectures, recitations, and office hours will be held online via Zoom: **https://pitt.zoom.us**. Connection information will be posted in Canvas.

Zoom will be our virtual classroom and the same behavior and etiquette is expected as in the physical classroom. In order to keep background noise to minimal you should mute your microphone all the time unless you want to ask or answer a question. Be aware that Zoom meetings will be recorded so that students in this course can watch them later, but they will not be available outside this course.

Grade Change Policy

Grade cutoffs are chosen to be as fair as possible but ultimately the line must 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 your scores at any time in Canvas.

Academic Policies

The university Academic Policies are posted as a separate document in Canvas.

Note that several students were caught to use “tutoring” sites for help with exams at the end of the Spring semester and they are currently involved in academic integrity proceedings. We are routinely monitoring many sites to identify material from our own courses. First-time cheating on exams may result in failing the course according to Dietrich School guidelines.