Spring 2017 Section 2 for Phys 212, Lewis Room 101 (Auditorium), T TH 08:00A-09:15A

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Office Hours

Tuesday 12:45pm-2:45pm, Lewis 211 (up the main stairs, turn left, last door on left).

or by appointment at my office in Room 1032 NCPA (National Center for Physical Acoustics). Additional office hour can be set at days before Exams.

To find NCPA, search for Jamie L. Whitten National Center for Physical Acoustics on the campus map (map.olemiss.edu)

also see http://www.phy.olemiss.edu/~thomas for Learning Center hours. The Physics Department Tutoring Center is located in Room 104 (or 103A) Lewis Hall and is available (free of charge) to all students enrolled in physics and astronomy classes.

Course Description

Calculus-based introductory physics (2nd semester).

Prerequisites: Phys 211 (C or higher strongly recommended)

Corequisites: *Phys 222 (laboratory associated with this course), Math 262.*

Textbook

Physics for Scientists and Engineers, 4/E, Randall D. Knight, with Student Workbook and Mastering Physics

Bring Student Workbook to the lectures as we will often use questions in it

Grades

The grades are based on the following:

25 %	Final Exam	
20 % each	2 Midterm Exams	
20 % total	Quizzes (about 10)	These are in general given each Thursday except on exam weeks and the first and last weeks of class.
13 % total	Homework Assignments	
2% total	Participation	

The lowest quiz score is not counted.

Grading Scale

A: 100.0 – 92.0	**B+**: 87.4 – 82.5	**C+**: 74.9 – 70.0	**D**: 62.4 – 50.0
A-: 91.9 – 87.5	**B**: 82.4 – 78.5	**C**: 69.9 – 66.0	
	B-: 78.4 – 75.0	**C-**: 65.9 – 62.5	**F:** <50.0

Note that the total Quiz score is the same as a midterm exam. I expect each student to stay on top of the material throughout the course of the semester. **Think of the QUIZZES like a midterm exam given in small installments.** There may also be pop quizzes on occasion.

Homework

The homework assignments will have a Web based section and a **written** part. The online section will be completed through the Pearson Mastering web site at the following URL:

http://www.pearsonmastering.com

Class code: provide over email (sent via blackboard)

Go to this web site and register. You are required to do this as the majority of our homework assignments will be web-based. The deadline is in general on Monday midnight.

The deadline for hand-written solutions of the homework is the beginning of Tuesday class. Late assignments will not be accepted without a valid excuse.

> **Take the HW seriously – you can't learn Physics without working and understanding problems. (**keeping a bound notebook with handwritten solutions is useful for preparing exams**)**

Exams

There will be two out-of-class midterm exams on Feb. 23 and April 13 at 5:30pm in the JAC (Jackson Avenue Center). There will be no rescheduling of these exams under any circumstances other than disability (see below).
The final exam will take place during finals week at a date and time to be determined.

You may bring a non-programmable scientific calculator. *Programmable calculators, such as TI-82 and above, will be confiscated.* Phones must be turned off and put away at all times until you have left the room, as well as anything else at the professor/proctor's discretion. Bring your student ID for verification when you turn in your exam. A list of useful formulas will be provided before and during the exam, along with any necessary constants.

Rules

Attendances and absences. Attendance is expected. Federal policy requires that we verify attendance once during the first two weeks of classes for scholarship purposes. Please see http://olemiss.edu/gotoclass for more information. Students are responsible for any material or information presented in lecture.

There will typically be group work or similar during lecture. Often this work will be out of the Student Workbook required for the class. *Bring your workbook to class each day.* Occasionally the problems I ask you to work will be collected and checked for participation. Picking returned homework solutions on Tuesday is also checked as participation. These will comprise *the participation grade*.

Absences during quizzes and exams due to severe or contagious illness will be excused, along with other reasonable emergencies. A doctor's note or other documentation will be required. Certain official university events such as athletic participation will also be excused, but requires advance notice. Excused quizzes will be dropped. Excused exams will be replaced by the final exam score; due to the common exam time (see below) they can not be made up.

Disabilities. If you have any disability that requires accommodation, please bring it to my attention as soon as possible. Some accommodations will require verification.

Extra Credit Opportunities

Occasionally I will give extra credit opportunities in and out of the lectures.

Learning Objectives

After completing this course, the student should understand the physical principles and have developed the necessary skills to solve problems by applying these principles. They should also have a grasp of the law of universal gravitation, and the essential role of oscillations and wave motion in physics.

Goals

The central goal is for you to learn how to think about and apply physical concepts. The main challenge you will face is in developing problem solving skills. Physics problems often involve several steps and usually they require more than just a simple application of formulas in the book. *The problems may seem very difficult early on. It may take some time for you develop your skills and doing the homework is an essential part of the process.* I am available to help you. I want you to do well. Come to my office hours, and/or use the Physics Tutoring Room. I am glad to work with you over the phone or email, though I can't guarantee that you will always receive a timely response to e-mail inquiries.

Useful notes:

Physics can be hard. You shouldn't expect to get every point on every exam problem, but partial credit will be given depending on the progress made and portion correct. Exams will consist of problems of varying difficulty.

The easiest will be "plug-and-chug" and not require a deep understanding and represent a C level of knowledge; weekly quizzes will generally be at this level.

Medium problems will require synthesizing multiple relations and represent a B level of knowledge.

To expect an A you should not only be able to the above, but also have a deep understanding of the material to avoid pitfalls and where calculus is appropriate, and be able to solve problems different from what you've seen. There will generally be a problem on every exam requiring this level of understanding.

Physics is inherently mathematical. A strong grasp of algebra and trigonometry are essential. You will also be expected to make use of differential calculus.

Tentative Course Outline (subject to change/update)

Week	Day	Content & Reading
1 (1/23-1/27)	T	Syllabus, Policies, Advice
	Tu	Electric Charge, Coulomb's Law (Ch. 22.1-4)
2 (1/30-2/3)	T	Electric Fields (Ch. 22.5-23.2)
	Tu	Electric Fields of Continuous Charge Distributions (Ch. 23.3-23.5)
3 (2/6-2/10)	T	Motion of Charges (Ch. 23.6-7)
	Tu	Electric Flux (Ch. 24.1-4)
4 (2/13-2/17)	T	Electric Potential Energy (Ch. 25.1-4)
	Tu	Electric Potential of Many Charges and Distributions (Ch. 25.5-7)
5 (2/20-2/24)	T	Potential and Field Relationship (Ch. 26.1-4)
	Tu	Potential of Conductors; Capacitance (Ch. 26.4-7) **Exam 1**
6 (2/27-3/3)	T	Current, Conduction, Resistivity, Resistance (Ch. 27.1-4)
	Tu	Ohm's Law, Circuits (Ch. 27.5, 28.1-2)
7 (3/3-3/10)	T	Circuits (Ch. 28.3-9)
	Tu	Magnetism, Cross Product (Ch. 29.1-3)
8 Spring Break		
9 (3/20-3/24)	T	Magnetic Sources, Ampere's Law (Ch. 29.3-6)
	Tu	Magnetic Force, Magnetism in Matter (Ch. 29.7-10)
10 (3/27-3/31)	T	Motional Emf, Magnetic Flux, Lenz's Law/Faraday's Law (Ch. 30.1-5)
	Tu	More Lenz's Law/Faraday's Law, Induced Currents, Inductors (Ch. 30.6-10)
11 (4/3-4/7)	T	Field Transformations, Displacement Current, Maxwell's Equations (Ch. 31.1-4)
	Tu	EM Waves, Intensity, Pressure, Polarization of EM Waves (Ch. 31.5-7)
12 (4/10-4/14)	T	AC Circuit Components (Ch. 32.1-4)
	Tu	Series RLC Circuit (Ch. 32.5-6) **Exam 2**
13 (4/17-4/21)	T	Interference, Diffraction (Ch. 33.1-4)
	Tu	More Diffraction, Interferometry (Ch. 33.5-8)
14 (4/24-4/28)	T	Ray Model, Reflection, Refraction (Ch. 34.1-4)
	Tu	Images, Ray Diagrams, Lenses (Ch. 34.4-6)
15 (5/1-5/5)	T	Spherical Mirrors, Lens Combinations (34.7-35.1)
	Tu	Optical Instruments, Color, Resolution (Ch. 35.2-6)