Physics 212
Sections 1 and 4

Section 1: 2:00-2:50 MWF; Section 4: 8:00-8:50 MWF

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Dates and material covered may change as the course progresses and we sync with other sections.

Course Description: Second semester introductory physics covering Electicity & Magnetism, Optics, and related applications.
Prerequisites: Phys 211 (C or higher strongly recommended)
Corequisites: Phys 222 (laboratory associated with this course), Math 262
Texts: *Physics for Scientists and Engineers*, Knight, 4th Edition, with Student Workbook and Mastering Physics

Course Objectives:
At the completion of this course, students will be able to:

1. Predict the motion of particles and other objects in electric and mangetic fields
2. Calculate electric and magnetic fields
3. Analyze basic circuits
4. Analyze both classical (ray) and wave optic phenomena

In addition, students will master numerical problem solving skills begun in Phys 211, as well as analytical (non-numeric) problem solving.

Grade Breakdown:

Participation	2%
Vector Quiz	2%
Assignments	12%
Other Quizzes	1-10%
2 Midterm Exams	17-22% each
Final Exam	40%

Letter Grade Distribution:

		>= 92	A	88 - 92	A-
84 - 88	B+	80 - 84	B	76 - 80	B-
72 - 76	C+	68 - 72	C	64 - 68	C-
52 - 64	D			<= 52	F

These boundaries may be adjusted lower at the professor's discretion.

Course Policies:

- **Grades**

  - You must show your work, including formulas used (from given list on exams) and any major algebraic steps, to get credit on exam problems and written homework. It should be clear enough for the grader to follow. All numbers should have the correct amount of significant figures (unless stated otherwise in instructions) and appropriate units. Partial credit will be given depending on the progress made and portion correct.

  - Grades will be posted on Blackboard. If you think there is an error, notify me as soon as possible.

  - Raw exam scores, including the final, may be adjusted ("curved") depending on the difficulty of the exam. Not every score will receive the same adjustment, depending on whether the scores are too spread out or too compressed. *The curve of the first exam will be preliminary until after the drop deadline.*

- **Attendance and Absences**

  - Attendance is required, and 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. Attendance will not count for course grade directly but you should still scan in.

  - 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. This 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 documenation 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.

- **Vector Quiz** There will be a quiz over vectors the second Monday of class. This quiz is over all the vector knowledge from Phys 211.

- **Other Quizzes** Other quizzes will take place on Wednesdays at the beginning of class. We will not have a quiz every week, certainly not exam weeks, but you should come prepared for one.

- **Assignments**

  - There will be two types of assignments in Pearson Mastering Physics: Learning Modules and regular homework assignments (mostly problems). It is strongly recommended that you write out full solutions (as you would on an exam) as you are working the online problems. You will be asked to turn in this writeup in class for the last 5 problems of every homework, due at the same time. This writeup will be checked by the grader for thoroughness, assigning 0-2 points per problem graded depending on the quality of the work, though not totally for correctness as the online homework numbers are randomized for every student. You can still get points for turning this in even if you don't get the correct answer in Mastering Physics.

  - Assignments will correspond to specific chapters and be assigned one class period before the chapter is completed. You will have 2-3 class periods to complete the homework depending on the length of the chapter. Some chapters may be broken into two assignments. Learning Modules will be due the lecture after the corresponding reading. Since the homework is somewhat irregular, you should check Mastering Physics after every class.

  - You may consult other students, Learning Center TAs, or myself, but at the end, you should be the one to complete each problem, and are encouraged to work on your own before getting help. Copied homework will not receive credit.

- The Pearson Mastering portion of the homework problems will be accepted late at a penalty of 10% per day. The hand-written portion and learning modules will not be accepted late.

- Assigned readings are on the schedule at the end of this syllabus. It is recommended you do a prereading ahead of lecture in addition to a careful reading afterward.

- **Exams** 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.

  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.

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

Tentative Course Outline:

Week	Day	Content & Reading
1 (1/23-1/27)	M	Syllabus, Policies, Advice
	W	Electric Charge (Ch. 22.1-3)
	F	Coulomb's Law (Ch. 22.4)
2 (1/30-2/3)	M	**Vector Quiz**; Electric Fields (Ch. 22.5)
	W	Electric Fields of Many Charges (Ch. 23.1-2)
	F	Continuous Charge Distributions (Ch. 23.3)
3 (2/6-2/10)	M	More Continuous Charge Distributions (Ch. 23.4-5)
	W	Motion of Charge in an Electric Field (Ch. 23.6-7)
	F	Electric Flux (Ch. 24.2-4)
4 (2/13-2/17)	M	Electric Potential Energy (Ch. 25.1-3)
	W	Electric Potential (Ch. 25.4-6)
	F	Electric Potential of Many Charges and Distributions (Ch. 25.7)
5 (2/20-2/24)	M	Potential and Field Relationship (Ch. 26.1-2)
	W	Potential of Conductors; Capacitance (Ch. 24.6; 26.3-5)
	Th	**Exam 1**
	F	Capacitors (Ch. 26.5-7)
6 (2/27-3/3)	M	Current, Conduction (Ch. 27.1-3)
	W	Resistivity, Resistance, Ohm's Law (Ch. 27.4-5)
	F	Circuits (Ch. 28.1-2)
7 (3/6-3/10)	M	Energy and Power in Circuits; Resistor Combinations (Ch. 28.3-6)
	W	Circuit Analysis, RC Circuits (Ch. 28.7-9)
	F	Magnetism, Cross Product (Ch. 29.1-3)
8 Spring Break		
9 (3/20-3/24)	M	Magnetic Sources (Ch. 29.3-5)
	W	Ampere's Law, Magnetic Force (Ch. 29.6-7)
	F	More Magnetic Force, Magnetism in Matter (Ch. 29.8-10)
10 (3/27-3/31)	M	Motional Emf, Magnetic Flux (Ch. 30.1-3)
	W	Lenz's Law/Faraday's Law (Ch. 30.4-6)
	F	Induced Currents, Inductors (Ch. 30.7-10)
11 (4/3-4/7)	M	Field Transformations, Displacement Current (Ch. 31.1-3)
	W	Maxwell's Equations, EM Waves (Ch. 31.4-5)
	F	Intensity, Pressure, Polarization of EM Waves (Ch. 31.6-7)
12 (4/10-4/14)	M	AC Circuit Components (Ch. 32.1-4)
	W	Series RLC Circuit (Ch. 32.5-6)
	Th	**Exam 2**
	F	**Good Friday holiday**
13 (4/17-4/21)	M	Interference (Ch. 33.1-2)
	W	Diffraction (Ch. 33.3-5)
	F	More Diffraction, Interferometry (Ch. 33.6-8)
14 (4/24-4/28)	M	Ray Model, Reflection, Refraction (Ch. 34.1-3)
	W	Images, Ray Diagrams (Ch. 34.4-5)
	F	Lenses (Ch. 34.5-6)
15 (5/1-5/5)	M	Spherical Mirrors, Lens Combinations (34.7-35.1)
	W	Optical Instruments (Ch. 35.2-4)
	F	Color, Resolution (Ch. 35.5-6)