

# General Physics II: Electricity and Magnetism, Wave Motion and Optics

PHY 162.003/004 --- Spring 2002 Syllabus  
Physics Department --- Mercer University

**Text:** Fundamentals of Physics, 6<sup>th</sup> edition, by Halliday, Resnick, and Walker

**Class Meetings:** 162.003 MWF 11:00-11:50am, WSC 101

162.004 MWF 12:00-12:50pm, WSC 101

**Instructor:** Dr. Jose L. Balduz Jr

**email:** [balduz\\_jl@mercer.edu](mailto:balduz_jl@mercer.edu)

**phone:** (478)301-2229

**office:** Willet Science Center 110

**office hours:** MTWRF 3-4pm, or by appointment, or try your luck anytime...

See Physics Department home page at <http://physics.mercer.edu>.

This course is the second in the two-semester sequence PHY 161 & 162 General Physics I & II, which is a calculus-based introduction to physics. The two main themes in this course are **electricity and magnetism**, and **waves**. Following a brief introduction, we will consider a series of topics: wave phenomena, including sound; electric charges and fields, and Gauss' law; electric potentials, capacitance, and resistance; magnetic fields and their sources, and induction; magnetic materials; and electromagnetic waves. Students will learn to think scientifically about the physical world, analyze mathematically various situations, reach qualitative conclusions, and compute accurately numerical answers to specific questions. Although we will cover a number of topics and physical systems, the students' goal should be to learn to think about nature and solve problems as physicists do.

This course is intended primarily for physical science, math, and engineering majors, but is also recommended for others with good mathematical aptitude (including pre-med students and life sciences majors). Pre-requisites are PHY 161 and an introductory calculus course such as MAT 191. In addition to basic physical concepts such as the kinematics of point particles, forces, momentum and energy, work, and angular momentum, students must have a working knowledge of basic calculus including differentiation and integration, as well as geometry, algebra, and trigonometry. Co-requisite are PHY 162L, the laboratory counterpart of this course, and MAT 192, a second semester of calculus: Students must be concurrently enrolled or have equivalent prior academic credit.

**Lectures:** For each chapter, I will discuss the material, do examples, answer questions, ask questions to stimulate thinking and discussion, and try to get the class interested in physics. We will also go over solutions to homework problems. When possible, I will include classroom demonstrations.

**Homework (no grade):** For each chapter there will be a list of problems for students to solve, working alone or in groups as they wish. After the lectures for that chapter are complete, and before the day of the quiz for that chapter, I will provide a complete solution set as a handout. Note that some of these problems, or similar ones, will appear on tests and the final exam: If you do not master them, you will probably not do well in the course overall.

**Quizzes (35% of the total grade):** There will be about twelve of these, one per chapter covered. Each one will contain a conceptual part and a numerical problem part. They will be simple but *closed-book*.

Each student will answer the quiz working alone. Then the entire class will consider the quiz as a whole, and complete answers will be provided. Each quiz will be about 10 minutes long.

**Tests (50% of the total grade):** There will be four of these during the course, covering two or three chapters each. They will also include both conceptual and numerical questions. They will be 50 minutes long and *closed-book*, but students may bring a *formula sheet* with anything *handwritten* on it, front and back, and a calculator.

**Final Exam (15% of the total grade):** There will also be a comprehensive *closed-book* final exam. Students may bring up to *four handwritten formula sheets*, and a calculator. It will be similar to the other tests, but will cover all the material in the course.

**Grading:** How much weight is given to each activity, in percentages of the final grade, is shown in the left table below. The final grade will be determined using the scale shown in the right table below.

	#	% each	total %
<b>Quizzes</b>	~12	~3	35
<b>Tests</b>	4	12.5	50
<b>Final Exam</b>	1	15	15
		<b>Total</b>	<b>100</b>

	GP	%
A	4	90-100
B+	3.5	85-89
B	3	80-84
C+	2.5	75-79
C	2	70-74
D	1	60-69
F	0	0-59

## Miscellaneous policies:

1. All parts of this syllabus are tentative and subject to revision.
2. Tests and quizzes for which no alternate arrangements were made *beforehand* may be made up only if the student has an official excuse: e.g., a note from a Dean's office, or a doctor's note.
3. There will be no dropped grades. All the work done in the course will be counted.
4. There will be no extra-credit work.
5. The College of Liberal Arts' academic misconduct policy will be followed. In addition, all students are bound by the Mercer University Honor Code.
6. Students are *strongly encouraged* to discuss with the instructor all their work during the course, *regardless of their grades*. Questions about point awards should be brought up as soon as possible, as all grades will be final *one week* after the materials are graded and returned to the students.
7. Students who believe that they possess disabilities for which reasonable accommodation is required must so inform the instructor *at the close of their first class meeting*. They must then identify their disability and the accommodation requested. The instructor will refer them to the office of the Dean of Students for evaluation, documentation of their disability, and a recommendation as to the accommodation, if any, to be provided. Students who do NOT consult with the instructor and follow up at the office of the Dean of Students, as provided above, will thereby waive any claim to a disability and the right to any accommodation pertaining thereto.
8. All requests for reasonable accommodation are welcome also in regard to absence from class for school representation (i.e., athletic or other events) or personal/family problems. *Let's talk about it...*