

**Physics 122**  
**General Physics II**  
**Spring, 2015**

**Prerequisites:** Students must have taken and passed  
Calculus I(MA201) and  
Calculus II(MA202),  
and have passed PHY121.

**Instructor:** Charles Benesh

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**Office Hours:** to be determined

**Grading:** 55% - 5 Exams  
25% - Weekly Homework and Quizzes  
20% - Weekly Laboratory

**Text:** *University Physics*  
by Young and Freedman, 12th edition  
*Sapling Learning* Homework System

- **Exams:** Periodic exams will be given in class, per the attached schedule. Students who cannot take the exam at the scheduled time will have five points subtracted from their score.

The exams will consist of questions similar/related to the homework problems. Roughly half of the exam will consist of multiple choice/short answer problems, with the other half composed of “story” problems similar to those on the homework. Exams are closed book, but each student is allowed a single sheet (8 1/2 by 11) of formulas.

There will be three exams and a final given, with the final consisting of a regular hour exam plus a conceptual test of topics covered during the semester. For each student, the lowest of the 5 test scores will be replaced by the average of the other four. Zeroes may not be dropped.

- **Lecture Attendance:** Regular attendance in class is both expected and recommended. Generally, quizzes are only given when attendance falls below 70%. Therefore, the day you don’t show up is more likely to have a quiz.....
- **Quizzes:** I reserve the right to give unannounced in class quizzes which will count towards the homework portion of your grade. No makeup quizzes will be given.
- **Homework:** There will be a homework assignment every week. Homework will be due at the beginning of class on the assignment’s due date. The homework will consist of two types, online problems which may be accessed at the Sapling Learning website (worth 1 point each) and written problems from the book which must be turned in handwritten form (2 points each). *The online assignments must be turned in online.*

Written homework assignments must have your name, the due date of the assignment, and a list of the the problems assigned written at the top of the front of the first page. Solutions to the problems must appear in the order they are assigned. If any of this information is missing, a point will be subtracted from your score on that assignment.

A correct solution to a homework problem will consist of *all* of the following:

- 1. A picture that summarizes and represents the problem, including relevant physical information. Depending on the nature of the problem, this may include “physics pictures” such as free body diagrams, motion diagrams, or circuit diagrams.

- 2. A sentence or two describing why you chose to use those equations in this particular problem. (i.e. what were the keywords in the description of the problem that told you those equations were applicable? What physical principles are you trying to apply?)
- 3. Correct use of the equations describing the physical situation to extract the correct answer.

- **Laboratory:** Attendance in the laboratory is required. If you cannot attend a lab meeting, makeup laboratories will be available at the instructor's discretion. Arrangement for makeup labs should be made immediately (in advance if possible), as lab equipment must be arranged in advance of the proposed makeup date, and may not be available later. *It is extremely unlikely (although not impossible) that I will agree to allow a student to makeup more than one lab during the course of the semester.*

After each Lab, a report will be turned in for grading. Please note that the average score on the lab reports is usually around 80 per cent. This means that a student's lab score will not improve her overall course grade much, but a low lab score can significantly **LOWER** your grade.

- **Late Homework and Labwork:** Homework and Lab Reports that are turned in late will be penalized one point per day they are late, including weekends and holidays.

## Class Schedule - General Physics II

Jan 7	Course Intro, Electric Charge
9	Coulombs Law
	LAB: Readiness Assessment
	<b>READ:</b> Chapter 21
Jan 12	Electric Fields and the Principle of Superposition
14	Field Mapping
16	Electric Dipoles
	LAB 1 - Coulomb's Law
	<b>READ:</b> Chapter 21
Jan 21	NO CLASS
21	Gauss' Law
23	Applications of Gauss' Law
	LAB 2 - Electric Field Mapping
	<b>READ:</b> Chapter 23
Jan 26	Electric Potential Energy
28	Electric Potential
30	Electric Potential & Electric Fields
	Exam I
	<b>READ:</b> Chapter 23
Feb 2	Capacitance
4	Capacitors
6	Capacitors in Series & Parallel
	LAB 3 - Electric Potential
	<b>READ:</b> Chapter 24
Feb 9	Energy Storage in Capacitors & Dielectrics
11	Electric Current
13	Resistance and Electro-Motive Force
	LAB 4 - A Few Good Capacitors
	<b>READ:</b> Chapter 25

Feb 16	Energy and Power in Electric Circuits
18	Kirchoff's Laws
20	RC Circuits
	LAB 5 - Resistivity
	<b>READ:</b> Chapter 26
Feb 23	Magnetic Fields
25	Charged Particles in Magnetic Fields
27	Forces on Current Carrying Wires
	Exam II
	<b>READ:</b> Chapter 27
Mar 2-6	NO CLASS
Mar 9	Torque on a Current Loop
11	Biot-Savart Law
13	Ampere's Law
	Lab 6 - Current Events
	<b>READ:</b> Chapter 28
Mar 16	Applications of Ampere's Law
18	Magnetic Flux and Induction
20	Faraday's Law
	Lab 7 - RC Circuits
	<b>READ:</b> Chapter 29
Mar 23	Displacement Current
25	Inductance
27	Self-Inductance
	LAB 8 - Magnetic Fields
	<b>READ:</b> Chapter 30
Mar 30	Energy Storage in Magnetic Fields
Apr 1	R-L Circuits
3	NO CLASS
	Exam III
	<b>READ:</b> Chapter 30

Apr 6	L-C Circuits
8	RLC Circuits
10	AC Circuits
	LAB 9 - Geomagnetism
	<b>READ:</b> Chapter 31
Apr 13	NO CLASS
15	NO CLASS
17	Impedance and Reactance
	NO Lab
	<b>READ:</b> Chapter 31
Apr 20	L-R-C Series Circuit
22	Power in AC Circuits
24	Transformers
	LAB 10 - Ampere's Law
	<b>READ:</b> Chapter 31
Apr 27	Electro-magnetic waves
29	Energy in Electromagnetic Waves
	<b>READ:</b> Chapter 32
May 6	Last Day of Final Exam Week