

Prerequisite: PHY 2130, **Co-requisite (mandatory):** PHY 2141 Lab

Lecture Hours/ Location: T Th 11:45 – 1:10 p.m., Rm. 2009 Science Hall

Text : PHYSICS by Giambattista, Richardson and Richardson, McGraw-Hill. First Edition

Lecturer: Punya Talagala

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Office Hours: M 4:15 p.m. – 5:15 p.m., Th 1:30 p.m. – 2:30 p.m., or by appointment

Course Objective: This is a three-credit course, the continuation of General Physics I (PHY 2130) course. The goal is to give an introduction to physics, based on algebra and trigonometry. The topics covered include electricity, magnetism, and modern physics.

Lectures and Reading Assignments: The tentative schedule of lectures and reading assignments for the course is given on page 2. In order to learn from and participate in the discussion of the material covered during the lecture, it is very important for you to do the reading assignment before coming to class.

Quiz Sections: Quiz sections meet once a week and are important because they give you an opportunity to meet in smaller groups to ask questions, discuss homework assignments and some lecture material. For each quiz section you are expected to do the homework that relates to the material covered during the week prior to the quiz class. In the quiz sections, probably during the weeks indicated by asterisks, you will be given 10-minute quizzes, which will have questions and problems similar to your homework assignments. The **five highest** quiz grades will be considered when determining the final quiz grade. **No make-up quizzes will be given.** You will earn up to **10 points** towards your course grade for the attendance and performance of the quiz sections. Your score for the attendance of the quiz section is equivalent to the score of one 10-minute quiz.

Homework: The homework assignments are a good opportunity to really think about, digest, and apply the concepts discussed in your text and during the lecture. Doing the homework assignments is an invaluable practice for problem solving. Furthermore, the homework assignments may be used to cover some material not covered in class. For both these reasons, doing the homework problems regularly is an essential part of preparing you for exams. **It will be difficult to obtain a good grade in this course without making a conscientious effort to do all the homework.**

Online Assignments: The WebAssign online testing system (<http://webassign.net>) provides online homework submission and grading. You will be asked to solve and submit for grading some problems. You will earn up to **a maximum of 10 points** for the final score through WebAssign. You are encouraged to do these problems in a timely manner. If you buy the book at the bookstore, it will include a WebAssign access card valid for two semesters. However, if you lose this card, you need to purchase it online. Please consult your 'WebAssign Student Guide' for additional information. The WebAssign is not active at the moment and all the details including the date that it will start will be announced later.

Grading: Your course grade will be determined by the higher score obtained from the following two options.

(i) Two best one-hour exams	22 pts each	(ii) Three one-hour exams	19 pts each
Final exam	41 pts	Final exam	28 pts
Quiz section	10 pts	Quiz section	10 pts
WebAssign	10 pts	WebAssign	10 pts
Total	105 pts	Total	105 pts

NO MAKE-UP EXAMS WILL BE GIVEN.

Grading Scale: The overall course grade will be determined on the basis of the following table:

A	91-105 pts	B-	70 – 74 pts	D+	50 – 54 pts
A-	85 – 90 pts	C+	65 – 69 pts	D	45 - 49 pts
B+	80 – 84 pts	C	60 – 64 pts	D-	40 - 44 pts
B	75 - 79 pts	C-	55 - 59 pts	F	0 – 39 pts

TENTATIVE CLASS SCHEDULE

<u>Week</u>	<u>Date</u>	<u>Day</u>	<u>Lecture Topic</u>	<u>Reading Assignment</u>
1	09/03	Th	Electric Charges, Coulomb's Law	16.1 - 16.3
2	09/08	T	Electric Field, Conductors in Electrostatic Equilibrium	16.4 – 16.6
	09/10	Th	Electric Flux, Gauss's Law, Electric Potential energy	16.7, 17.1
3*	09/15	T	Electric Potential and Electric Field	17.2 - 17.4
	19/17	Th	Capacitance and Capacitors	17.5 – 17.7
4*	09/22	T	Electric Current and Circuits, Resistance and Resistivity, Power	18.1 – 18.4, 18.8
	09/24	Th	Series and Parallel Circuits, Review	18.6, 18.9
5	09/29	T	Review (Chapters 16–18) FIRST EXAM (Chapters 16 – Chapter 18 Part 1)	
	10/01	Th	Kirchhoff's Rules	18.5, 18.7
6*	10/06	T	RC Circuits, Electrical Safety	18.10, 18.11
	10/08	Th	Magnetic Forces and Fields	19.1 - 19.4
7*	10/13	T	Applications of Magnetic Forces, Torque	19.5 - 19.7
	10/15	Th	Magnetic field due to current, Magnetic Materials	19.8 – 19.10
8	10/20	T	Electromagnetic Induction, Faraday's Law, Lenz's law, and Applications	20.1 – 20.8
	10/22	Th	Inductance, LR Circuits, Review	20.9 – 20.10
9	10/27	T	Review (Chapters 18 - 20) SECOND EXAM(Chapters 18 Part 2 - Chapter 20)	
	10/29	Th	AC Circuits	21.1 - 21.4
10*	11/03	T	RLC Series Circuit, Filters	21.5 - 21.7
	11/05	Th	Blackbody Radiation, Photoelectric Effect,	27.1 – 27.4
11*	11/10	T	X-Rays, Compton Effect,	27.5 – 27.6
	11/12	Th	Atomic Spectra, Bohr Theory,	27.6 – 27.8

12	11/17	T	Wave-Particle Duality, Uncertainty Principle	28.1 -28.4
	11/19	Th	Hydrogen Atom, Electron Configurations, Review	28.6 – 28.8
13	11/24	T	Review (Chapters 21, 27 & 28) THIRD EXAM (Chapters 21, 27 & 28)	
	11/26	Th	No Class (Thanks Giving Recess)	
14*	12/01	T	Nuclear structure, Binding Energy, Radioactivity,	29.1 – 29.3
	12/03	Th	Decay Rates, Half lives, Applications,	29.3 - 29.5
15	12/08	T	Induced Nuclear Reactions, Fission and Fusion	29.6 - 29.8
	12/10	Th	Catch up and Review	
	12/18	F	Final Exam (10:40 a.m. – 1:10 p.m.) (Cumulative)	

PHY 2140 Fall 2009

HOMEWORK ASSIGNMENT

Chapter	Assignment		
	Conceptual Questions	Multiple Choice Questions	Problems
16	1,3,4,6,9,13,14	2,3,8,10	3,7,14,15,18,20,26,34,36,40,41,42,47,51
17	1,3,11,16,20	3,5,11,12	3,5,10,12,18,19,22,33,40,41,57,59,68,100
18	1,3,6,7,12,13,17,22	5,6,8,9	5,11,19,31,39,40,41,44,46,53,89,91,96

AVAILABLE RESOURCES

- Physics Resource Center
This is a Help Center for undergraduate physics students at the Department of Physics and Astronomy. The Center is located in Rm. 172 of Physics Research Building. You will be able to get assistance at this Center with your homework, lab-work, and other issues related to your course. The scheduled times of the center will be announced later.
- Tutoring and Supplemental Instruction (SI)
Tutoring is also available at the Academic Success Center (ASC) in Rm.1600 of Undergraduate Library. The SI leader appointed by the ASC for this course will be announced later.

PHY 2141 – LABORATORY

The laboratory (PHY 2141) is a separate one credit course that must be taken concurrently with the PHY 2140 lecture. The details and the procedures of the lab will be covered by your lab instructor.

- Your laboratory manual is to be purchased separately at the University Bookstore. Used Lab Manuals are not accepted.
- All the students must attend the labs for which they are registered.
- Please contact Dr. Scott Payson at 313-577-3280 for further information.

The following is the schedule of the experiments of the laboratory course.

LABORATORY EXPERIMENTS

Week	Dates	Experiment
1,2	09/03 – 09/11	NO LAB
3	09/14 – 09/18	Electrostatics
4	09/21 – 09/25	E-Fields & Equipotential Surfaces
5	09/28 – 10/02	I – V in Matter
6	10/05 – 10/09	Kirchhoff's Laws: Circuits
7	10/12 – 10/16	Cathode Ray Oscilloscope
8	10/19– 10/23	e/m of the electron
9	10/26 – 10/30	Quiz
10	11/02 – 11/06	Mag. Forces and Induced EMF
11	11/09 – 11/13	Photoelectric Effect
12	11/16 – 11/20	Spectroscopy
13	11/23 – 11/27	NO LAB
14	11/30 – 12/04	Radioactivity
15	12/07 – 12/11	Lab Test & Evaluation
16	12/14 – 12/18	NO LAB

Note: It is mandatory that PHY 2140 lecture and PHY 2141 laboratory are to be taken concurrently. If one decides to drop, he or she must drop both the lecture and the lab together. No one is allowed to drop only one of them.