

Spring 2015: PHYSICS 272 – GENERAL PHYSICS II

MTF 8:30-9:20 am (Section I) WAT 112

Instructor: Milincic Radovan (milincic@hawaii.edu)

Office hours (tentative): MW 10:25–11:30 PSB 204

Course description:

General Physics II is an introductory calculus-based course dealing with the principles and theories of electricity, magnetism and geometric optics. The primary goals of the course are to gain a solid understanding of fundamental physical principles and their mathematical expression, as required for applications in the physical sciences and engineering, and to introduce and develop the application of mathematics as the basic language of physics. Indeed, advances in the physical sciences can be realized only by properly recognizing and formulating new problems in the first place. And to perceive and tackle new problems, it is a solid understanding of fundamental physical and mathematical principles which is critical.

Textbook (required):

Young and Freedman, *University Physics, Volume 2*, 13th ed., Pearson Addison-Wesley, San Francisco, 2012.

Course Website: <https://aulima.hawaii.edu>

Internet (required):

This course uses the online resource *Mastering Physics*TM for homework assignments.

iClickers (required): Available at the UH Bookstore.

Grade distribution:

<i>Mastering Physics</i> TM Homework	: 3% BONUS
Chapter Homework	:10%
iClickers	: 2% BONUS
Midterm Exams (25% each)	:50%
Final Examination	:40%

Grade assignment:

(<i>approximate</i>)	A+ 93 >	B+ 81–85	C+ 66–70	D 50–55
	A 89–93	B 74–80	C 60–65	F < 50
	A– 86–88	B– 70–73	C– 56–59	

COURSE OUTLINE:

<u>Week</u>	<u>Text section</u> <u>Lectures</u>	<u>Exer. #</u> <u>Chapter Homework</u>
1.	Chapter 21: secs. 1-7	HW Ch 21: 22, 30, 33, 55, 60
2.	Chapter 22: secs. 1-5	HW Ch 22: 6, 12, 21, 26, 31
3.	Chapter 23: secs.1-5	HW Ch 23: 8, 17, 29, 32, 46
4.	Chapter 24:secs.1-5	HW Ch 24: 4, 21, 22, 28, 40
5.	Chapter 25:secs.1-5	HW Ch 25: 5, 11, 16, 38, 47
6.	Chapter 26: secs.1-2	
F	<u>MIDTERM 1 Chapters 21-25 -- **calculator allowed**</u>	
7.	Chapter 26: secs.3-4 Chapter 27: secs. 1-4	HW Ch 26: 6, 24, 32, 43, 47
8.	Chapter 27: secs. 5-7 Chapter 28: secs. 1-4	HW Ch 27: 7, 14, 27, 31, 44
9.	Chapter 28: secs. 5-7 Chapter 29: secs. 1-4	HW Ch 28: 8, 29, 30, 37, 49
10.	Chapter 29: secs. 5-7 Chapter 30: secs. 1-3	HW Ch 29: 3, 21, 34, 37, 41
11.	Chapter 30: secs.4-6 Chapter 31: secs.1-3	HW Ch 30: 6, 13, 21, 30, 34
12.	Chapter 31: secs.4-6	HW Ch 31: 10, 20, 24, 34, 37
F	<u>MIDTERM 2 Chapters 26-30 -- **calculator allowed**</u>	

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| 13. | Chapter 32: secs.1-5 | HW Ch 32: 4, 14, 19, 30, 35 |
| 14. | Chapter 33:secs.1-7 | HW Ch 33: 11, 19, 25, 29, 36 |
| 15. | Chapter 34: secs. 1-4 | HW Ch 34: 8, 20, 29, 33, 39 |
| 16. | Final exam Review | |

FINAL EXAM -- TBD * calculator allowed *

This Schedule is subject to Change

Homework Assignments:

*Mastering Physics*TM Homework assignment will be assigned from the *Mastering Physics* website (required). Some of the homework may involve simple calculations or be of conceptual nature.

Mastering Physics course code: MPMILINCIC08213

Written weekly problem set (consisting of problems from Exercises and Problem section) will be due each Monday at the start of the class. Please submit solutions that are clear and detailed in addition to being correct.

Guidelines for Weekly Problem Sets

For presentation:

1. Solutions should be written in complete and proper English.
2. Proper units must accompany all final numerical results.
3. Draw diagrams whenever possible, and label them clearly.
4. Do not insert numerical values until the *final step* in a calculation.
(Physics is learned symbolically. If you simply insert numbers at the start of a calculation and crunch away, nothing will ever make sense.)

In general:

5. Regarding significant figures: *Do not round the results of any intermediate calculations ... ever!* Leave at least three significant figures when reporting numerical results.
6. Form the habit of checking the dimensions of any equations that you derive. Many times, this simple exercise will reveal whether you made an error somewhere along the line.
7. If possible, ask yourself whether an answer makes sense physically.

MIDTERMS:

Two in-class 50-min. midterms will be given during the term. If you miss a midterm and have a documented, valid reason for doing so, please come and discuss it with me as soon as possible. It is not enough just to send an e-mail message about your absence from a midterm. You must state in writing why you missed a midterm (the form to fill out is at the end of the syllabus). A single make-up midterm will be given toward the end of the term. If I get nothing in writing from you, a score of zero will be assigned for the midterm you missed.

A one week notice will be given for each test

(NOTE: If you are going to be away on a scheduled UH-related activity and miss a midterm, it is your responsibility to discuss it with me at least two weeks before such an expected absence.)

FINAL EXAM:

The final exam is comprehensive – it will be based on all the subject material covered in the course. However, the material covered during the second half of the term is given more emphasis.

Student Learning Objectives

Learning Outcomes

On completion successful students will be able to:

- a) Demonstrate mastery of problem solving skills in general
- b) Demonstrate an understanding of the Coulomb's law, Gauss's law, electric field, potential and electric potential
- c) Demonstrate mastery of solving circuits and currents
- d) Demonstrate an understanding of the magnetic field for steady currents and moving charges.
- e) Calculate magnetic properties of simple current distributions using Biot-Savart and Ampère's laws.
- f) Demonstrate an understanding of electromagnetic induction and related concepts, making calculations using Faraday and Lenz's laws.
- g) Demonstrate an appreciation of the physical content of Maxwell's laws in integral form.
- h) Demonstrate an understanding of electromagnetic waves and AC circuits
- j) Demonstrate an understanding of nature of propagation of light and basic laws of geometric optics

PERMISSION TO TAKE THE MAKE-UP MIDTERM

Name _____

(please print)

Student ID: _____

MIDTERM missed: MIDTERM-I MIDTERM-II
(circle one)

Reason for missing the midterm: (please be very brief)

By submitting this form, I understand that if I miss the make-up midterm for any reason whatsoever my grade in the missed midterm will be zero.

Signature: _____

