

GENERAL PHYSICS II

MESSIAH COLLEGE

FALL 2009 August 21, 2009

Catalogue Course #: PHYS 212

Credit: 4 hours

Prerequisite: General Physics I (PHYS 211 or equivalent)

Instructor: Dr. Abaz Kryemadhi
Assistant Professor of Physics
329 Frey Hall Phone: 2384
e-mail: akryemadhi@messiah.edu

Class Sessions:	<u>Time</u>	<u>Location</u>
Lect. Section 01	MWF 9-9:50 am	Frey 243
02	MWF 10-10:50 am	Frey 243
Lab Section A:	T 1:20-4:00 pm	Frey 350
B:	W 2:00 -5:00 pm	Frey 350
C:	R 1:20-4:00 pm	Frey 350

Office Hours:

M 1:00 - 3PM; T 10:30AM -12:30 PM; W 1:00-2:00 PM

Please send me an e-mail or phone if you want to stop by other times

WebSite:

http://home.messiah.edu/~akryemadhi/PHYS212/phys212_2009/phys212.html

This is the website for the class. This is where details about homework, updates and such will be posted. Visit this website frequently, especially if you are missing a class. The website is password protected. Username and Password will be provided in class.

Description:

This course is the second of a two-semester calculus-based general physics sequence. There is a three-fold emphasis on concepts, problem solving and applications. PHYS 212 builds on basics of classical mechanics and methods introduced in PHYS 211. Labs focus on use of electronic equipment to measure periodic motion, waves (both sound & light), basic electrical quantities and modern physics. Topical coverage includes:

- 1) Mechanical oscillations & waves,
- 2) Electrostatics [Coulomb's Law],
- 3) Electricity [Ohm's Law] & magnetism

Objectives:

1. Students will use concepts to describe, classify, **model**, and predict topical phenomena, aided by inductive (experimental) and deductive (rational) methods, including calculus.
2. Students will develop **analytical skills** appropriate to solve both symbolic and numerical problems involving quantities associated with the topical phenomena. When

obtaining a solution from calculator, spreadsheet or simulation software, students will critically evaluate the method (e.g., How valid are my assumptions?) and significance (e.g., how certain are my values and do my units check?) of.

3. Students will be able to describe the role physical quantities and principles play in existing environmental and technological systems. Students will be able to better understand, measure, test and explore the feasibility of electrical and wave technologies. Students will recognize limits of classical concepts where modern physics provides a superior model.

Mission of Department of Mathematical Sciences and General Education

The mission of the Department of Mathematical Sciences is:

to educate students in excellent problem solving skills and the quantitative analysis of Mathematics, Statistics, Physics, and Computer Science

and to challenge students to live out their faith in their vocation as they become servant leaders in society, church, and the world.

The General Education program at Messiah College encourages the development of knowledge, skills, and attitudes of intellect, character, and faith that Christians use in lives of service, leadership and reconciliation.

Americans with Disabilities Act (ADA):

Messiah College welcomes students with disabilities. If you have a documented disability and wish to discuss academic accommodations for this specific course, please contact the professor as soon as possible. All disability accommodations must be pre-approved through the Office of Disability Services, 342 Old Main (5358).

Textbook:

University Physics, 12th edition by Young & Freedman, Addison Wesley, 2008.

Lab Manual:

General Physics II Laboratory Manual, compiled by Professor Bob Barrett, Messiah College, Fall 2008. The bookstore has copies.

Homework Policies and Recommendations:

There will be one homework per chapter, the homeworks that are due on test times are not graded but they are required to be done. The homework will be assigned on the day of the first lecture of the chapter and will be due on the day of the first lecture of the next chapter. Unexcused late homework will not receive credit. Tutoring sessions may be held as announced to provide students an appointed time and place either to help each other or to receive additional help from the teaching assistant, as necessary. Though students may work in teams (on homework, labs and other exercises) to benefit from collaborative interaction, each student must take care to adequately develop his/her own independent working knowledge and confidence with course material in preparation for a test. Increased mastery of the course material may also be obtained by working extra unassigned exercises and problems from the course text, or other references including physics web sites. [There are answers to the odd problems at the

back of the text!]

Lab work, Reports, Policies and Recommendations:

Check the lab manual for details

Quizzes

There will be a quiz for every chapter we go through, unless there is a test week. Quiz days will be announced in class at least two days before the actual quiz day.

Tests

There will be three tests during the semester. Make up tests are done in case of emergency also if you have athletic commitments or other school commitments, you will have to make sure you let me know in advance so a different test time can be arranged for you.

Final

Read Messiah's Handbook for the policies on the finals

Class & Group Participation Recommendations:

For each class period, students should:

- 1) Prepare by reading relevant sections of text,
- 2) Participate cooperatively in any learning group activity, research independently
- 3) offer constructive comments, ideas, questions or answers when interacting with the professor and with each other during interactive times in class and the labs.

Evaluation:

Your semester grade will be based upon credit earned for homework, lab reports, class & group participation, quizzes, tests and a final exam.

Distribution of course credit:

Homework	20%
Lab reports	20%
Quizzes	5%
Tests (3@ 10 ea)	30%
Class & Group participation	5%
Final Exam	20%
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	100%

Grade Scale:

A	93-100%	B	83-86%	C	73-76%	D	50-66%
A-	90-92%	B-	80-82%	C-	70-72%	F	0-49%
B+	87-89%	C+	77-79%	D+	67-69%		

Course Schedule:

This schedule is subject to change at the instructor's discretion based on time limitations and the actual pace of the class

Date	Lecture Topics	What's due
W, Sept. 2	Introduction and Class Syllabus	
F, Sept. 4	Start Periodic Motion (Ch 13)	
M, Sept. 7	Continue Period Motion (Ch 13)	
W, Sept. 9	End Chapter 13	
F, Sept. 11	Start Mechanical Waves (Ch 15)	HW#1 Due
M, Sept. 14	Ch 15 continues	
W, Sept. 16	Finish Ch 15	
F, Sept. 18	Start Sound & Hearing (Ch 16)	HW#2 Due
M, Sept. 21	Continue Ch 16	
W, Sept. 23	Finish Ch 16 Start Charge and Electric Field (Ch 21)	
F, Sept. 25	Test1 in class	HW#3 Due
M, Sept. 28	Start Charge and Electric Field (Ch 21)	
W, Sept. 30	Continue Ch 21	
F, Oct. 2	Finish Ch 21	
M, Oct. 5	Start Electric Flux-Gauss' Law (Ch 22)	HW#4 Due
W, Oct. 7	Continue Ch 22	
F, Oct. 9	Continue Ch 22	
M, Oct. 12	Finish Ch 22	
W, Oct. 14	Start Electric Potential (Ch 23)	HW#5 Due
F, Oct. 16	Continue Ch 23	
M, Oct. 19	Finish Ch 23	
W, Oct. 21	Start Capacitance and	HW#6 Due

	Dielectrics (Ch 24)	
F, Oct. 23	Mid-Fall Break☺	
M, Oct. 26	Continue Ch 24	
W, Oct. 28	End Ch24	
F, Oct. 30	Test 2 in Class	HW#7 Due
M, Nov. 2	Start Resistance and EMF (Ch 25)	
W, Nov. 4	Continue Ch 25	
F, Nov. 6	Finish Ch 25	
M, Nov. 9	Start Direct Current (DC) Circuits (Ch 26)	HW#8 Due
W, Nov. 11	Continue Ch 26	
F, Nov. 13	Finish Ch 26	
M, Nov. 16	Start Magnetic Field and Forces (Ch 27)	HW#9 Due
W, Nov 18	Continue Ch 27	
F, Nov 20	Finish Ch 27	
M, Nov 23	Test3 in class	HW#10 Due
W, Nov 25	Thanksgiving Break☺	
F, Nov 27	Thanksgiving Break☺	
M, Nov 30	Start Sources of Magnetic Field (Ch 28)	
W, Dec. 2	Continue Ch 28	
F, Dec. 4	Finish Ch 28	
M, Dec. 7	Start Electromagnetic Induction (Ch 29)	HW#11 Due
W, Dec 9	Continue on Ch 29	
F, Dec 11	Finish Ch 29 and review	HW#12 Due

FINAL EXAMS:

Section 01 Monday 12/14 8:00-10:00 AM

F243

Section 02 Tuesday 12/15 1:30-3:30 PM

F243

Succeeding in Physics 212

So whether you eat or drink or [study physics], do it all for the glory of God.

1 Corinthians 10:31

Whatever you do, work at it with all your heart, as working for the Lord, not for men. Colossians 3:23

- Nature is the manifestation of God's glory and physics is the study of nature. So by studying physics, you're also learning about God's creativity, fine-tuning, and order.
- Turn in every assignment complete and on time; take every test and quiz.
- If you don't get your grade report e-mailed to you, tell me immediately.
- If you're having trouble with any assignment or concept, come and talk to me. We can even set up an appointment outside of office hours.
- To prepare for exams, the magic formula is **problem solving, problem solving and more problem solving!** Work multiple problems from the end of each chapter by yourself. If you don't understand a problem, consult with me or your classmates.
- Participate in class by asking questions and volunteering information.
- Don't wait until the last minute to try and improve your grade.
- Find some classmates to do homework with and participate fully in your work sessions. Make sure you understand how and why to do each problem.