

Physics 205

Periodic Motion and Waves

Fall, 2011

Prerequisites:	Students must have taken and passed General Physics I & II(Phys121-22), or have passed College Physics I & II(Phys 115-116)* and have received departmental approval.
Instructor:	Charles Benesh
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Web:	http://www.wesleyancollege.edu/~cbenesh
Office Hours:	M 1:30-2:30 Tu &Th 8:15-9:30 W 9-10 F 4:30-5:30
Grading:	55% - 5 Exams 25% - Weekly Homework and Quizzes 20% - Weekly Laboratory
Text:	<i>University Physics</i> by Young and Freedman, 12th edition

- **Exams:** Periodic exams will be given in class, per the attached schedule. 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:** Expect a homework assignment every week. When the assignment has been set you will receive an email reminder with a link to the course website, where the assignment can be found. Homework will generally be due on Fridays, at 5 pm. 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. The lowest lab score for each student will be dropped. Please note that the average score on the lab reports is often 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:** Due to time constraints, I cannot grade more than one late assignment or lab report per student per week, including Finals week.(Note that Makeup Labs are not considered late until one week after the lab is made up.) In particular, this means that only one late assignment will be graded during the last week of classes and Finals Week.

Class Schedule - Periodic Motion and Waves

Aug	24	Simple Harmonic Motion
	26	Applications of Simple Harmonic Motion READ: Chapter 13
Aug	29	Damped Oscillators
	30	LAB 1 - Periodic Motion(TST)
	31	Forced Oscillators
Sep	2	Coupled Oscillators READ: Chapter 13
Sep	5	Labor Day - No Class
Sept	6	LAB 2 - Penduli
Sep	7	Review of Inductance
	9	R-L Circuits READ: Chapter 31
Sep	12	L-C Circuits
	13	LAB 3 - Damped Oscillators
	14	L-R-C Circuits
	16	Alternating Current READ: Chapter 31 & 32
Sep	19	Reactance
	20	EXAM I- Chapters 13,31-3
	21	Power in AC circuits
	23	Resonances in AC Circuits READ: Chapter 32

Sep	26	Periodic Waves
	27	LAB 4 - AC Circuits
	28	The Wave Equation in One Dimension
	30	Fourier Analysis
		READ: Ch 19
Oct	3	Energy in Wave Motion
	4	LAB 5 - Fourier Analysis
	5	The Principle of Superposition
	7	
		READ: Chapters 19- 20
Oct	10	No Class
	11	No Lab
	12	Standing Waves and Normal Modes
	14	Interference
		READ: Chapter 20
Oct	17	Sound Waves
	18	Exam II
	19	Sound Intensity & Beats
	21	The Doppler Effect
		READ: Chapter 21
Oct	24	Electromagnetic Waves
y	25	Lab 6 - Normal Modes
	26	TBA
	28	TBA
		READ: Chapter 33
Oct	31	Energy and Momentum in Electromagnetic Waves
Nov	1	LAB 7 - Sound
	2	Reflection and Refraction
	4	Polarization
		READ: Chapter 34

Nov 7	Lenses
8	Lab 8 - Reflection & Refraction
9	Graphical Methods
11	Cameras
	READ: Chapter 35
Nov 14	Eyes
15	LAB 9 - Optics
16	Microscopes and Telescopes
18	Interference
	READ: Chapter 35
Nov 21	Two Source Interference
22	Exam III
23	NO Class
25	No Class
	READ: Chapter 35
Nov 28	Thin Films
29	LAB 10 - Interference
30	Interferometry
Dec 2	The Michelson Interferometer
	READ:
Dec 5	Single Slit Diffraction
Dec 6	Multiple Slit Diffraction
Dec 7	Resolving Power
9	
	READ: Chapter 36
Dec 8:30 AM	Final Exam