SUNY College at Cortland
Physics Department
Physics 203 – Fundamentals of Physics III
Spring 2008

Catalog Description:
Thermodynamics, wave motion, light, sound. Prerequisite: PHY 202.

Course Information:
Lecture: TR 10:05 - 11:20
Bowers Hall 139
3 credit hours

Course Web Site: http://web.cortland.edu/wheeler/phy203

Professor Information:
Dr. Richard M. Wheeler, Professor of Physics and Chairman of the Physics Department
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Bowers Hall 154
(607) 753-2822
Office Hours: MW 10-11 or by appointment

Attendance Policy:
Class attendance is not mandatory, however, you are responsible for everything discussed and assigned in class.

Required Texts:
University Physics, 11th edition, Hugh D. Young and Roger A. Freeman, Volumes 1 and 2 (Addison & Wesley, 2004).

Evaluation of Student Performance:
3 tests, 25% each
6 homework sets, 25% total

First test: Thursday, February 28	Chapters 14, 17 - 20
Second test: Tuesday, April 1	Chapters 15 - 16
Third test: Friday, May 9	Chapters 33 - 36

It is a good idea to have your book with you in class along with a calculator.

You must keep current in your reading and homework assignments. If at any time you do not understand the lecture or book please see me immediately. Falling behind in this course will be fatal. To pass this course , you must have an overall average of 50% or better. This means every test and every homework assignment is important. **Don't fall behind.** Come to me immediately when you need help.

Learning Objectives:

1. The goals of this course are to critically examine the basic and analytical principles behind the topics enumerated below, and be able to explain their technical and practical applications.
2. Become familiar with the standard topics in heat, wave motion, light, and electricity and magnetism: historical development of physical principles, pressure in fluids and gases and Bernoulli's Equation, the basic concepts of heat and temperature, thermal properties of matter, laws of thermodynamics and their applications, detailed study of mechanical waves with examples from sound waves, electromagnetic waves and their relationship to light, the properties of light waves, interference, diffraction and polarization, geometrical optics, and image formation in various mirrors and lenses.
3. Become proficient in various analytic techniques appropriate to the study of physics, solve algebraic problems, and understand units and sources of error.

Students with Disability:
If you are a student with a disability and wish to request accommodations, please contact the Office of Student Disability Services located in B-40 VanHoesen Hall or call (607) 753-2066 for an appointment. Information regarding your disability will be treated in a confidential manner. Because many accommodations require early planning, requests for accommodations should be made as early as possible.

Extended Course Goals keyed to the New York State Education Department Adolescent Education (NYSED) Content Examination in Physics Rubric
Students will:

0002 Understand the historical and contemporary contexts of the study of physics and the applications of physics to everyday life.
0003 Understand the process of scientific inquiry and the role of observation and experimentation in explaining natural phenomena.
0005 Understand principles and procedures of measurement used in physics.
0006 Understand the use of mathematics and mathematical modeling in physics.
0009 Understand characteristics of forces and methods used to measure force, and solve algebraic problems involving forces.
0016 Understand the statics and dynamics of fluids.
0017 Understand the principles and laws of thermodynamics, the relationship between temperature and heat, and the principles of thermal expansion, thermal contraction, and heat transfer.
0018 Understand the kinetic-molecular theory and its relationship to thermodynamics; analyze the characteristics of solids, liquids, and gases; and solve problems involving the gas laws.
0024 Understand waves and wave motion, and analyze problems involving wave motion.
0025 Understand and apply the principles of wave reflection, refraction, diffraction, interference, polarization, dispersion, and the Doppler effect.
0026 Understand and apply knowledge of the characteristics of sound waves and the means by which sound waves are produced and transmitted
0027 Understand the production and characteristics of electromagnetic waves

0028 Understand and apply the principles of lenses and mirrors

Extended Course Goals keyed to the SUNY College at Cortland Conceptual Framework
Students will gain an understanding of:
Knowledge Base

Extended Course Goals keyed to the National Science Teachers Association
Students will gain an understanding of:
Unifying Concepts and Processes in Science
History and Nature of Science
Science as Inquiry
Physical Science

Course Schedule

Week	Date	Chapter Covered	Assignment
1	1/24	Fluid Mechanics	
		Homework#1	14: 14, 26, 40, 51, 56, 80 17: 12, 31, 38, 60, 68
2	1/29		
	1/31	Temperature and Heat	
3	2/5	Thermal Properties	
		Homework #2	18: 15, 27, 43, 56, 60 19: 17, 36, 44, 50
		Homework #1 due	
	2/7		
4	2/12	1st Law of Thermodynamics	
	2/14		
5	2/19	2nd Law of Thermodynamics	
		Homework #3	20: 13, 16, 22, 28, 46
		Homework #2 due	
	2/21		
6	2/26	Mechanical Waves	
		Homework #4	15: 5, 11, 17, 29, 37, 55 16: Q17, 7, 25, 29, 31, 37, 45, 49, 74
		Homework #3 due	
	2/28	**1st Examination: Chpts 14, 17-20**	

7	3/4	Wave Motion	
	3/6	Interference	
8	3/11	Spring Break	
	3/13	Spring Break	
9	3/18		
	3/20	Sound	
10	3/22		
	3/27	Nature of Light	
		Homework #5	33: 10, 16, 26, 35, 41 34: 16, 28, 63, 70, 94, 96
		Homework #4 due	
11	4/1	**2nd Examination: Chpts 15 and 16**	
	4/3		
12	4/8	Geometric Optics	
	4/10		
13	4/15		
	4/17	Interference	
14	4/22	Optical Instruments	
		Homework #6	34: 36, 46, 48, 58, 106 35: 4, 8, 32, 36, 42 36: 2, 12, 24, 44, 60
		Homework #5 due	
	4/24		
15	4/29	Diffraction	
	5/1		
16	5/6	Homework #6 due	
	5/8	Review	
17	5/9	10:05-11:20 Friday **3rd Examination: Chpts. 33 -36**	