



## Contra Costa College Course Outline

<b>Department &amp; Number</b>	PHYS-231	<b>Number of Weeks per term</b>	18
<b>Course Title</b>	General Physics III	<b>Lecture Hours per term</b>	90
<b>Prerequisite</b>	PHYS-130	<b>Lab Hours per term</b>	36
<b>Co-requisite</b>		<b>*HBA per term</b>	
<b>Prerequisite or concurrently</b>	MATH-290	<b>Activity Hours per term</b>	
<b>Challenge Policy</b>		<b>Units</b>	4
<b>Advisory</b>			

**\*HOURS BY ARRANGEMENT:**  Hours per term.

**ACTIVITIES:** (Please provide a list of the activities students will perform in order to satisfy the HBA requirement):

### COURSE DESCRIPTION

This course is a continuation of Physics 230. This semester covers three largely independent topics in physics: Thermal physics, including temperature, basic heat flow and the laws of thermodynamics; Optics, including both geometric and physical optics; and 20<sup>th</sup> Century physics, which covers special relativity, introductory quantum mechanics, and fundamental nuclear physics.

### COURSE OBJECTIVES

At the completion of the course the student will be able to:

1. Analyze and solve heat flow problems
2. Apply the laws of thermodynamics to pV diagrams including the Carnot cycle
3. Apply the laws of reflection and refraction
4. Apply the basic lens/mirror equations
5. Analyze and solve interference and diffraction problems
6. Apply the basic laws of special relativity
7. Demonstrate proficiency with photoelectric effect, Compton effect, and spectral lines
8. Apply basic quantum mechanics to one-dimensional problems
9. Explain basics of nuclear structure and decay and analyze basic nuclear reactions

**COURSE CONTENT:** (In detail; attach additional information as needed and include percentage breakdown)

15	%	1. Temperature and Heat Flow
15	%	2. Laws of Thermodynamics
5	%	3. Laws of Reflection and Refraction
10	%	4. Lenses and Mirrors
15	%	5. Physical Optics
15	%	6. Special Relativity
10	%	7. Introduction to Quantum Mechanics
5	%	8. Wave Functions
10	%	9. Fundamental Nuclear Physics

These percentages vary from instructor to instructor.

### METHODS OF INSTRUCTION

1. Lecture with demonstrations
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2. Classroom discussions and activities
3. Problem Solving
4. Laboratory experiments to explore the concepts discussed in class
5. Computer applications, including spreadsheets

**INSTRUCTIONAL MATERIALS**

<b>Textbook Title:</b>	Physics for Scientists and Engineers: A Strategic Approach
<b>Author:</b>	Randall D. Knight
<b>Publisher:</b>	Pearson Addison-Wesley
<b>Edition/Date:</b>	2 <sup>nd</sup> Edition / Copyright 2008

**NOTE:** To be UC transferable, the text must be dated within the last 5 years OR a statement of justification for a text beyond the last 5 years must be included.

**COURSE EXPECTATIONS** (Use applicable expectations)

Outside of Class Weekly Assignments	Hours per week
Weekly Reading Assignments	3
Weekly Writing Assignments	3
Weekly Math Problems	
Lab or Software Application Assignments	3
Other Performance Assignments	

**STUDENT EVALUATION: (Show percentage breakdown for evaluation instruments)**

30	%	Exams
10	%	Homework
12	%	Laboratory Reports
45	%	Three Mini-Finals
3	%	Special Poster Paper

The percentages vary from instructor to instructor.

**GRADING POLICY (Choose LG, CR/NC, or SC)**

<input checked="" type="checkbox"/> <b>Letter Grade</b>	<input type="checkbox"/> <b>Pass / No Pass</b>	<input type="checkbox"/> <b>Student Choice</b>
88% - 100% = A	70% and above = Pass	90% - 100% = A
76% - 87% = B	Below 70% = No Pass	80% - 89% = B
60% - 75% = C		70% - 79% = C
50% - 59% = D		60% - 69% = D
Below 50% = F		Below 60% = F

The percentages vary from instructor to instructor.

or  
70% and above = Pass  
Below 70% = No Pass

**Prepared by:** Jon Celesia

**Date:** Spring 2012