UNIVERSITY COLLEGE OF THE FRASER VALLEY

COURSE INFORMATION

DISCIPLINE/DEPARTMENT: PHYSICS

IMPLEMENTATION DATE: Fall 1995

Revised: November 1997

PHYSICS 105  Non-Calculus Physics  4
SUBJECT/NUMBER OF COURSE  DESCRIPTIVE TITLE  UCFV CREDITS

CALENDAR DESCRIPTION: Though suitable for all science students, this course is of particular interest to students taking biology and chemistry. Topics include: thermodynamics, waves, geometric and wave optics, electricity and instrumentation, and an introduction to quantum phenomena. This course can be taken by students who only need one non-calculus physics course and already have Grade 12 physics, or can be the second half of a full-year non-calculus program. The course can also be used in combination with Physics 111 as an entry into a UCFV physics major, although Physics 111 and 112 is the preferred route.

RATIONALE:

COURSE PREREQUISITES: Math 12 plus one of (Physics 12, PHYS 101, or 111)

COURSE COREQUISITES:

HOURS PER TERM

FOR EACH

STUDENT

Lecture 60 hrs  Student Directed
Laboratory 45 hrs  Learning hrs
Seminar hrs  Other - specify: hrs
Field Experience hrs  hrs
TOTAL 105 HRS

MAXIMUM ENROLMENT: 40

Is transfer credit requested? Yes  No

AUTHORIZATION SIGNATURES:

Course Designer(s): T. Cooper, PhD

Chairperson: T. Cooper, PhD

Curriculum Committee

Department Head: T. Cooper, PhD

Dean: K. Wayne Welsh, PhD

PAC: Approval in Principle  PAC: Final Approval: October 29, 1997

(Date)  (Date)
Physics 105

NAME & NUMBER OF COURSE

SYNONYMOUS COURSES:

(a) replaces _____Physics 102_____
    (course #)

(b) cannot take _____N/A_____
    (course #)

SUPPLIES/MATERIALS:

TEXTBOOKS, REFERENCES, MATERIALS (List reading resources elsewhere)

Cuttell and Johnson, Physics, 3rd Ed.

OBJECTIVES:

This course emphasizes the physics of greatest importance to students in the life sciences, and also serves as an overview of several topics for students interested in physics. Physics 105 is a stand-alone course for those students who only need a single non-calculus physics course and who already have Physics 12 or equivalent.

METHODS:

Lecture, demonstration, small group practice, discussion, recitation, and laboratory.

STUDENT EVALUATION PROCEDURE:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Final exam</td>
<td>35%</td>
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<tr>
<td>Midterm exam</td>
<td>25%</td>
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<tr>
<td>Laboratory</td>
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<tr>
<td>Homework</td>
<td>10%</td>
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<tr>
<td>Recitations</td>
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Physics 105
NAME & NUMBER OF COURSE

COURSE CONTENT

Week 1  Chap.  18/19  Electric Field and Potential
Week 2  Chap.  19/20  Potential/Ohm's Law/Circuits/Power
Week 3  Chap.  16  Waves I
Week 4  Chap.  16  Waves I (cont'd)
Week 5  Chap.  17  Waves II
Week 6  Chap.  12  Temperature
Week 7  Chap.  13  Heat Transfer
Week 8  Chap.  13/14
Week 9  Chap.  14/15  Ideal Gasses and Kinetic Theory
Week 10  Chap.  15  Thermodynamics
Week 11  Chap.  25  Geometric Optics:reflection
Week 12  Chap.  26  Geometric Optics:refraction
Week 13  Chap.  27  Interference
Week 14  Chap.  29  Brief Overview of 'Modern' Physics

LABORATORY EXPERIMENTS:

Week 1  Introduction, Error Analysis and Propagation Exercises
Week 2  Circuit Elements and Ohm's Law
Week 3  Series and Parallel Resistance
Week 4  Standing Waves in a Wire
Week 5  Standing Waves in an Air Column
Week 6  Break
Week 7  Calorimetry (Specific Heat of Assorted Metals)
Week 8  Conservation of Energy (Electrical Equivalent of Heat)
Week 9  Makeup Lab
Week 10  Geometrical Optics and Thin Lenses
Week 11  Interference and Diffraction
Week 12  Multiple Slit Diffraction (Grating Spectrometer)
Week 13  Hydrogen Spectra and the Bohr Atom
Week 14  Makeup and/or Tutorials for Study for Final