School of Arts & Science
PHYSICS DEPARTMENT

Course Outline

PHYS 192 PHYSICS 2 for CIVIL AND MECHANICAL ENGINEERING TECHNOLOGIES

A continuation of Physics 191. Topics include impulse and momentum, simple harmonic motion, mechanical waves, sound, light, thermal properties of matter, electricity and magnetism.

OFFERED:	Q2
CREDIT:	3
IN-CLASS WORKLOAD:	5 lecture, 2 lab (alt. weeks)
PRE-/CO-REQUISITES:	Physics 191

REQUIRED MATERIALS:

Textbook: "College Physics", 3rd edition, Giambattista, A., Richardson, B.M., and Richardson, R.C.

Physics 192 lab manual
Scientific calculator (any calculator is acceptable with the exception of personal computers)
Graph paper (must be either 10 lines/inch or millimeter graph paper)

DEPARTMENT POLICIES REGARDING TESTING:

1. Students must write quizzes, tests, midterm tests, etc., on the date and time assigned by the instructor. Missed exams normally receive a zero grade. In exceptional circumstances such as medical issues or a documented illness, a make-up exam may be given or the test may be waived at the discretion of the instructor. The instructor should be notified prior to the exam.

2. The final exam will cover the entire course and will be 3 hours long. As stated in the current college calendar (p. 39) "students are expected to write tests and final exams at the scheduled time and place." Exceptions will only be considered for emergency circumstances as outlined in the calendar. Excursions, holidays or scheduled travel flights are not accepted.

DEPARTMENT POLICIES REGARDING LABS:

1. Lab exercises will be done on a bi-weekly basis during the scheduled lab period. Attendance is mandatory and you will be required to "sign in" at the beginning of each one. If, at the end of the lab period, it becomes necessary to complete your report at home, your data must be reviewed and signed (initialed) by the instructor before leaving the lab.

2. All assigned laboratory exercises and reports must be completed with an overall grade of 60% in order to obtain credit for this course. Attendance is required for all lab

exercises at the scheduled times. A lab may be made up at a later time only in the case of documented illness or other extenuating circumstances.

3. Late penalties: Reports for labs done on alternate weeks will normally be due at the end of the second lab period in the following week. For overdue labs, a late penalty of one mark per day (10%) will be assessed for the first five days following the due date. After this date a completed report is still required and earns a maximum mark of 5/10.

4. At the discretion of the instructor, a student who is repeating this Physics course may not be required to complete the laboratory exercises a second time if an average lab grade of 70% or better was obtained.

STUDY TIME

It is recommended that between 5 and 10 hours per week (or more for students with a weak background) be spent studying for this course outside of class time.

LEARNING SUPPORT AND SERVICES FOR STUDENTS

There are a variety of services available for students to assist them throughout their learning. This information is available in the College Calendar, Registrar's Office or the College web site at under "Getting Your Coursework Done" at:

http://www.camosun.bc.ca

ACADEMIC CONDUCT POLICY

There is an Academic Conduct Policy which includes plagiarism. It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, Registration, and on the College web site in the Policy Section.

www.camosun.bc.ca/divisions/pres/policy/2-education/2-5.html

GRADING

The standard mark distribution for this course is as follows:

Final Exam	50%
Midterms and other work	40%
Lab Reports	10%
	100%

OUTLINE:

1. **Impulse and Momentum**

    1.1 Impulse – momentum theorem
    1.2 Conservation of linear momentum
    1.3 Collisions
        1.3.1 One-dimensional collisions
        1.3.2 Two-dimensional collisions
    1.4 Angular momentum

2. **Simple Harmonic Motion**

    2.1 Physics of a spring
        2.1.1 Hooke's law
        2.1.2 Springs in series and parallel
        2.1.3 Potential energy
    2.2 Simple harmonic motion
        2.2.1 Period, frequency, and amplitude
        2.2.2 Equations for displacement, velocity and acceleration in terms of time
        2.2.3 Graphs of displacement, velocity and acceleration as functions of time
        2.2.4 Maximum velocity and acceleration
    2.3 Simple pendulum

3. **Waves**

    3.1 Properties of waves
        3.1.1 Types of waves – transverse/longitudinal
        3.1.2 Speed, period, wavelength and amplitude of waves
        3.1.3 Speed of wave on a string
        3.1.4 The wave function for transverse waves
        3.1.5 Wave speed and particle speed
    3.2 Sound waves
        3.2.1 Properties
        3.2.2 Speed of sound in solids, liquids, and gases
              and temperature dependence
        3.2.3 The wave function for longitudinal waves
    3.3 Principle of linear superposition
        3.3.1 Constructive and destructive interference
        3.3.2 Standing waves – transverse and longitudinal
        3.3.3 The standing wave function

4. **Thermal Properties of Matter**

    4.1 Temperature scales
    4.2 Thermometers
    4.3 Thermal expansion
        4.3.1 Linear expansion - Thermal stress
        4.3.2 Volume expansion