Camosun College Physics Department

Physics 150 – Technical Physics 1
Q2, 2004/5

Course description: PHYS 150 is a first course in physics with application to engineering technology, recommended for students who took Physics 11 several years ago. Students are introduced to the nature of physics and the methodology of problem-solving and data analysis. Topics include measurement, graphs, 1-D kinematics, dynamics, mechanical and thermal energy.

Pre or Corequisite: Math 172 or Math 11 or assessment.

Instructor: Patricia Wrean (Pat)
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Web Page: http://www.camosun.bc.ca/~wrean/

Office Hours: Posted on office door and on website

Grade Calculation:

The final grade will be calculated according to the following breakdown:

Quizzes (4 or 5)	30%
Assignments	10%
Labs	10%
Final exam	50%

Note: The lowest quiz grade will be dropped when calculating the average of your quizzes. This allows a student to be absent on any one quiz day for any reason, including illness, without penalty. There is no provision for "making up" a missed quiz.

Note: If your final exam grade is higher than your term work grade, then your final exam grade will count as 90% of your final grade with the other 10% being your lab mark.

Final Exam:

The final exam will cover the entire course and will be 3 hours long. As stated in the current college calendar on page 39, "students are expected to write tests and final examinations at the scheduled time and place." Exceptions will only be considered due to emergency circumstances as outlined in the calendar. Holidays or scheduled flights are not considered to be emergencies.

Late Policy:

Late assignments and labs will be given a penalty of 25% per week.

Labs:

This course has both a lecture and a lab component. All five labs must be completed to obtain a grade for the course. In addition, all labs must be handed in to the lab instructor before the final exam, or the student will not be allowed to write the final.

To pass this course, you must pass the lab portion with a minimum average of 60%. However, if you get less than 60% on any individual lab, you may fix your mistakes on that lab and turn it in again for a passing grade.

Materials required:

Scientific Calculator (any calculator is acceptable, with the exception of personal computers)
Ruler and Protractor
Graph Paper (must be either 10 lines/inch or millimetre graph paper)

Grade Scale:

Final letter grades are normally assigned as follows (subject to the conditions above):

Percentage	**Letter Grade**
95 to 100	A+
90 to 94	A
85 to 89	A-
80 to 84	B+
75 to 79	B
70 to 74	B-
65 to 69	C+
60 to 64	C
50 to 59	D
below 50	F

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 http://www.camosun.bc.ca

Academic Conduct Policy:

There is an Academic Conduct Policy. 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 at

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

Course Outline:

Introduction to Measurement:
- concepts of physics
- precision and accuracy
- significant figures
- scientific notation
- SI units, base units, prefixes, derived units
- unit conversion
- problem solving ---------- Assignment #1, Test #1 ----------

Newton's First Law:
- vectors and scalars
- forces
- free-body diagrams
- mass vs. weight
- Newton's First Law
- equilibrium problems
- graphical intro to forces in 2D ---------- Assignment #2, Test #2 ----------

Kinematics:
- intro to kinematics
- kinematic quantities
- average speed/velocity
- instantaneous velocity
- kinematic equations
- kinematic graphs ---------- Assignment #3, Test #3 ----------

Newton's Second Law:
- 2^{nd} Law problems
- falling objects

Newton's Third Law:
- free-body diagrams
- 3^{rd} law concept problems ---------- Assignment #4, Test #4 ----------

Work, Energy, & Power
- work
- kinetic energy
- gravitational potential energy
- elastic potential energy
- conservation of energy
- power and efficiency ---------- Assignment #5, Test #5 ----------

Graphing
- construct graphs, plotting and labeling correctly
- analyze linear graphs
- analyze non-linear graphs

Review