![Camosun College logo] CAMOSUN COLLEGE	**School of Arts & Science** **PHYSICS DEPARTMENT** **PHYS 060** **Introductory Physics** **Quarter 1/Fall 2009 (Sep-Dec)**

COURSE OUTLINE

The course description is online @ http://camosun.ca/learn/calendar/current/web/phys.html

Ω *Please note: the College electronically stores this outline for five (5) years only.*
*It is **strongly recommended** you keep a copy of this outline with your academic records.*
You will need this outline for any future application/s for transfer credit/s to other colleges/universities.

1.   Instructor Information

(a)	Instructor:	Ed Nelson		
(b)	Office Hours:	MTWTh 10:30 – 11:30		
(c)	Location:	F345B		
(d)	Phone:	370-3515	Alternative Phone:	
(e)	Email:	nelson@camosun.bc.ca		
(f)	Website:			

2.   Intended Learning Outcomes
(No changes are to be made to these Intended Learning Outcomes as approved by the Education Council of Camosun College.)

Upon completion of this course the student will be able to:

1. Demonstrate skill in the use of S.I. base and derived units.
2. Demonstrate skill in drawing graphs (by hand), determining slopes of linear graphs, linearization of non-linear data, and writing an equation to represent a linear graph.
3. Solve technical problems involving one-dimensional kinematics for a single particle with constant acceleration.
4. Solve technical problems involving the dynamics of a single particle in one dimension (force, weight, Newton's Laws of Motion).
5. Solve technical problems involving kinetic energy, gravitational potential energy, elastic potential energy, conservation of mechanical energy, and mechanical power.
6. Solve technical problems involving simple DC electric circuits, Ohm's Law, electric power, and resistors in series and parallel combination.
7. Solve technical problems involving nuclear energy (mass-energy equivalence, binding energy).
8. Assemble simple experimental apparatus using written instructions.
9. Observe, record, organize and display data in tables, graphs or charts.
10. Analyze linear graphs (determine area, slope, intercept, etc.).
11. Interpret meaning of experimental results in the context of the experimental objectives.

3.   Required Materials

(a) Texts PHYSICS 060 Course Materials Book, PHYSICS 060/150 Lab Manual, PHYSICS 060 Workbook (recommended)

(b) Other Simple scientific calculator, graph paper

4.   Course Content and Schedule
(This section can include: class hours, lab hours, out of class requirements and/or dates for quizzes, exams, lectures, labs, seminars, practicums, etc.)
LEC MTWTh 9:30 – 10:20 LAB F 9:30 – 11:20

5.   Basis of Student Assessment (Weighting)
(This section should be directly linked to the Intended Learning Outcomes.)
The student must be successful ($\geq$ 60%) in both the theory and laboratory assignments to pass the course. The approximate percentages used for the final grading are:

Quizzes	40%
Lab Work	10%
Final Exam (3 hours)	50%

Midterm tests may be discounted from the grading distribution (see above) if all term work, including term tests, labs, and assignments, has been completed and is 60% or higher. In this case, the final grade for the course may be based on a combination of the final exam (90%) and the lab mark (10%).

PHYSICS DEPARTMENT POLICIES REGARDING TESTING:

1. 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 exams 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.

2. Instructors are not required to provide make-up tests. At their discretion, instructors may waive a test or provide a make-up test only in the event of documented illness or other extenuating circumstances.

PHYSICS DEPARTMENT POLICIES REGARDING LABS:

1. All assigned laboratory exercises and reports must be completed and handed in prior to the date of the final exam with an overall grade of 60% in order to obtain credit for the course. A lab may be waived or made up at a later time only in the case of documented illness or other extenuating circumstances. If you will be absent from a lab period due to illness it is your responsibility to notify your instructor.

2. At the discretion of the instructor, a student who is repeating this Physics course may apply for lab exemption.

6. Grading System
(No changes are to be made to this section unless the Approved Course Description has been forwarded through the Education Council of Camosun College for approval.)

Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D	Minimum level of achievement for which credit is granted; a course with a "D" grade cannot be used as a prerequisite.	1
0-49	F	Minimum level has not been achieved.	0

Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy E-1.5 at **camosun.ca** for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	*Incomplete*: A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	*In progress*: A temporary grade assigned for courses that, due to design may require a further enrollment in the same course. No more than two IP grades will be assigned for the same course. *(For these courses a final grade will be assigned to either the 3rd course attempt or at the point of course completion.)*
CW	*Compulsory Withdrawal:* A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.

7. **Recommended Materials or Services to Assist Students to Succeed Throughout the Course**

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, at Student Services, or the College web site at
camosun.ca.

STUDENT CONDUCT POLICY

There is a Student 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, at Student Services,
and the College web site in the Policy Section.

ADDITIONAL COMMENTS AS APPROPRIATE OR AS REQUIRED

OUTLINE:

1. **Measurement & Units**

    1.1 Concepts of physics
    1.2 Accuracy and precision
    1.3 Significant figures
    1.4 Scientific notation
    1.5 Systeme Internationale (SI)
        1.5.1 Base units
        1.5.2 Prefixes
        1.5.3 Derived units
    1.6 Conversion of units
    1.7 Problem solving

2. **Graphical Analysis**

    2.1 Graph construction
        2.1.1 Plotting data
        2.1.2 Fitting curves to data
    2.2 Analyzing linear graphs
        2.2.1 Determination of slope and intercept
        2.2.2 The linear equation
    2.3 Analyzing non-linear graphs
        2.3.1 Recognition of power graphs
        2.3.2 Changing variables to produce linear graphs
        2.3.3 Writing equations for non-linear graphs

3. **Kinematics in One Dimension**

    3.1   Kinematic quantities
        3.1.1   Vector and scalar quantities
        3.1.2   Position, distance and displacement
        3.1.3   Average speed and velocity
        3.1.4   Acceleration
    3.2   Kinematic graphs
        3.2.1   Position versus time
        3.2.2   Displacement versus time
        3.2.3   Velocity versus time
    3.3   Equations of uniformly accelerated motion
        3.3.1   Solving kinematic problems
        3.3.2   Acceleration due to gravity
        3.3.3   Vertical motion near the Earth

4. **Dynamics in One Dimension**

    4.1   Concept of force
    4.2   Newton's first law of motion
        4.2.1   Concept of inertia
    4.3   Newton's second law of motion
        4.3.1   Dependence of acceleration on net force
        4.3.2   Dependence of acceleration on mass
        4.3.3   Dependence of net force on mass
    4.4   Newton's third law of motion
        4.4.1   Interpretation of examples of the law

5. **Work, Energy and Power**

    5.1   Work
        5.1.1   Definition
        5.1.2   Calculating work done by a force
        5.1.3   Positive and negative work
    5.2   Types of Mechanical Energy
        5.2.1   Kinetic energy
        5.2.2   Gravitational potential energy
        5.2.3   Elastic potential energy
    5.3   Work-Energy Theorem
    5.4   Conservation of Mechanical Energy
    5.5   Power and Efficiency

6. **Electrical Energy**

    6.1   Laws of Electrostatics
        6.1.1   Atomic structure
        6.1.2   Conductors and insulators
    6.2   Electric circuits
        6.2.1   Definitions of current, voltage and resistance
        6.2.2   Basic circuit elements
        6.2.3   Ohm's law
        6.2.4   Electrical energy and power
        6.2.5   Characteristics of series circuits
        6.2.6   Characteristics of parallel circuits

7. **<u>Nuclear Energy</u>**

    7.1   The nucleus
        7.1.1   Characteristics of the atom
    7.2   Mass-Energy
        7.2.1   Equivalence of mass and energy
        7.2.2   Mass defect in nucleus
        7.2.3   Binding energy
    7.3   Nuclear energy
        7.3.1   Fission and fusion
        7.3.2   Chain reactions
        7.3.3   Safety concerns