		School of Arts & Science *PHYSICS DEPARTMENT* **PHYS 060-01** **Introductory Physics** **2006W**

COURSE OUTLINE

The Approved Course Description is available on the web @ _____

Ω   *Please note: this outline will be electronically stored for five (5) years only.*
   It is strongly recommended students keep this outline for your records.

1. Instructor Information

(a)	Instructor:	Elizabeth Ploughman		
(b)	Office Hours:	Mon, Wed, Fri. 12:30-1:20 Tues.. 1:30 –2:20 Thurs. 5:30 -6:20		
(c)	Location:	F 314B		
(d)	Phone:	370 3517 please DO leave a **voicemail** message it **will be received** and responded to promptly	Alternative Phone:	
(e)	Email:			
(f)	Website:			

DO Not leave email messages as they will not be received until I check my emails from my office. Let me repeat that, important info. is to be left in my voicemail which I check throughout the day.
 If you wish to see me at other times you are free to knock on my office door, if I'me not too busy I will be happy to assist you. If you know in advance that you will need help at a non official time then see me to make an appointment.

2. Intended Learning Outcomes
(No changes are to be made to this section, unless the Approved Course Description has been forwarded through EDCO for approval.)

   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).

3. Required Materials

(a)	Texts	Physics 060 course material developed in Physics department Physics 060 lab manual
(b)	Other	Scientific calculator (any calculator is acceptable excluding personal computers) Graph paper (must be either 10 lines/inch or millimeter graph paper)

4. Course Content and Schedule
(Can include: class hours, lab hours, out of class requirements and/or dates for quizzes, exams, lectures, labs, seminars, practicums, etc.)

IN-CLASS WORKLOAD: 4 lecture, 2 lab (alt. weeks)
PRE-/CO-REQUISITES: Math 072 or Math 172 or Math11 or assessment
                            Math 072 and Math 073 recommended

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. **Nuclear Energy**

  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

5. Basis of Student Assessment (Weighting)
(Should be linked directly to learning outcomes.)

The standard mark distribution for this course is as follows:

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

This distribution may be amended by the instructor (see your Instructor's Information sheet).

A)Tests   will be chapter tests for all classes. At least 5 days notice will be given for each test and a brief review will be conducted
        The worst test will be dropped to allow for the fact **that no makeup tests** will be given unless medical documentation is provided by the student

B)LABS the worst lab will be dropped but all other labs must be completed
.Makeup labs are not usually allowed unless there is a documented medical reason. All labs must be submitted together every week, one week after the experiment is completed. Late labs will be heavily penalized.

C)Assignments *will occasionally be given to be completed during class time with a partner. These marks will be added to the lab mark total. Other homework is for the student's practice only*

6. Grading System
(No changes are to be made to this section, unless the Approved Course Description has been forwarded through EDCO for approval.)

Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
95-100	A+		9
90-94	A		8
85-89	A-		7
80-84	B+		6
75-79	B		5
70-74	B-		4
65-69	C+		3
60-64	C		2
50-59	D		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 at **camosun.ca** or 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 are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
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.

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.

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 on the College web site in the Policy Section.

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.**

3. **Refer to your instructor's information page for any additional policies regarding testing and grade calculation.**

DEPARTMENT POLICIES REGARDING LABS:
1. **All assigned laboratory exercises and reports must be completed with an overall grade of 60% in order to obtain credit for this course. A lab may be waived or made up at a later time only in the case of documented illness or other extenuating circumstances.**

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

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.

Note that there will be NO help available after the 2:30 class on Mon or Tuesday so please see me BEFORE or save the question until the next day