



CURRICULUM GUIDELINES

A: Division: **Instructional** Date: **27 April 1999**
 B: Department/ Program Area: **Science and Technology** New Course Revision
 If Revision, Section(s) Revised: **H,M,N,O, P,Q 1999-04-27**
 Date Last Revised: **27 May 1997**

C: **PHYS 107** D: **Introductory General Physics 1** E: **5**

Subject & Course No. Descriptive Title Semester Credits

F: Calendar Description: This is a non-calculus based course in mechanics for students with a maximum background in Physics 11 prior to entering Douglas College. Topics include: vectors; particle kinematics and dynamics; work energy and power; linear momentum; rotational motion; statics; vibratory motion; simple harmonic motion; waves; sound.

G: Allocation of Contact Hours to Types of Instruction/Learning Settings Primary Methods of Instructional Delivery and/or Learning Settings: Lecture/Laboratory Number of Contact Hours: (per week / semester for each descriptor) 7 Number of Weeks per Semester: 14	H: Course Prerequisites: BC Principles of Math 12 (C or higher) & either Physics 11 (C or higher) or Phys 104
	I. Course Corequisites:
	J. Course for which this Course is a Prerequisite: PHYS 207 or PHYS 210
	K. Maximum Class Size: 36

L: PLEASE INDICATE:

Non-Credit
 College Credit Non-Transfer
 College Credit Transfer: Requested Granted

SEE BC TRANSFER GUIDE FOR TRANSFER DETAILS (www.bccat.bc.ca)

****See end of document for more transfer credit information****

M: Course Objectives/Learning Outcomes. The student will be able to:

- 1) identify the following mechanical quantities; and their SI units:
displacement, velocity, speed, acceleration, force, mass, weight, friction, torque, work, translational kinetic energy, gravitational potential energy, power, linear momentum, impulse, angular displacement, angular velocity, angular acceleration, moment of inertia, rotational kinetic energy, angular momentum, stress, strain, elastic modulus, pressure, amplitude of motion, period of motion, frequency, spring potential energy, wavelength, wave intensity, intensity level.

- 2) demonstrate an understanding of the following concepts, procedures, and principles of mechanics through the solution of problems:
 - 2.1) vector addition via components
 - 2.2) average velocity and instantaneous velocity
 - 2.3) average acceleration and instantaneous acceleration
 - 2.4) uniformly accelerated motion
 - 2.5) free-fall motion
 - 2.6) Newton's laws of motion
 - 2.7) friction and coefficient of friction
 - 2.8) conditions for equilibrium
 - 2.9) work-energy theorem
 - 2.10) conservation of mechanical energy
 - 2.11) conservation of energy
 - 2.12) conservation of linear momentum
 - 2.13) centripetal acceleration and force
 - 2.14) universal law of gravitation
 - 2.15) Kepler's law
 - 2.16) rolling motion
 - 2.17) conservation of angular momentum
 - 2.18) elastic deformation of solids
 - 2.19) general form of Hooke's law
 - 2.20) Hooke's law for springs
 - 2.21) single harmonic motion
 - 2.22) wave parameters
 - 2.23) superposition principle
 - 2.24) resonance
 - 2.25) intensity level versus intensity of sound
 - 2.26) Doppler effect

3. perform laboratory experiments and analyse the data obtained using appropriate graphing techniques, scientific notation, significant figures, and experimental uncertainty consideration;

4. write a laboratory report in a conventional format required of submissions to scientific journals.

N: Course Content

1. **Mechanics**
 - 1.1) Vectors and vector addition
 - 1.2) Velocity and acceleration
 - 1.3) Uniformly accelerated motion in one dimension
 - 1.4) Projectile motion
 - 1.5) Newton's laws of motion
 - 1.6) Friction
 - 1.7) Objects in equilibrium
 - 1.8) Work and energy
 - 1.9) Linear momentum and collisions
 - 1.10) Circular motion kinematics
 - 1.11) Centripetal force
 - 1.12) Rotational dynamics
2. **Properties of Matter & Waves**
 - 2.1) Elastic properties of solids
 - 2.2) Hooke's law
 - 2.3) Simple harmonic motion
 - 2.4) Mechanical wave characteristics
 - 2.5) Standing waves
 - 2.6) Sound wave intensity
 - 2.7) Doppler effect
3. **Laboratory experiments**
 - 3.1) Composition of Forces/Static Equilibrium
 - 3.2) Uniformly Accelerated Motion
 - 3.3) Projectile Motion
 - 3.4) Simple Pendulum/Determination of Gravitational Acceleration
 - 3.5) Friction
 - 3.6) Collisions
 - 3.7) Orbital Motion and Centripetal Force
 - 3.8) Moment of Inertia
 - 3.9) Hooke's Law and Simple Harmonic Motion
 - 3.10) Standing Traverse Waves
 - 3.11) Resonant Air Columns/Speed of Sound in Air

O: Methods of Instruction

Classroom time will be divided between the presentation and discussion of concepts in mechanics on the one hand and the application of these concepts in problem solving on the other, with the majority of time devoted to the latter. The laboratory program will involve weekly, three hour sessions during which students will perform a set number of experiments. This course involves some group work.

P: Textbooks and Materials to be Purchased by Students

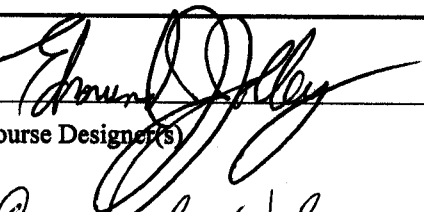
Hecht, E: Physics: Algebra/Trig, Second Edition, Brooks/Cole, 1998

Douglas College, Physics 107 Laboratory Experiments

Q: Means of Assessment

The final grade assigned for the course will be based upon the following components:

- a) final examination - minimum 25% / maximum of 40%
- b) at least three tests administered during the semester - minimum 40% / maximum of 50%; and
- c) submitted laboratory reports - minimum 20% / maximum of 25%.

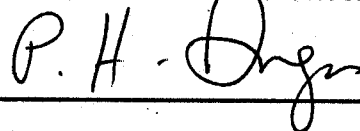
R: Prior Learning Assessment and Recognition: specify whether course is open for PLAR


Course Designer(s)



Dean/Director

Education Council/Curriculum Committee Representative



Registrar

L. Transfer Credit

- U.B.C.
 - i) PHYS 100
 - ii) With PHYS 207; PHYS 100 plus PHYS (3); exempts from PHYS 101
- S.F.U.
 - i) Physics 100 plus two units unassigned
 - ii) With 207, Physics 100, 130, plus five units unassigned (Physics)
 - iii) With 207 and grades of A or B in both, Physics 101, 102, 130 plus two units unassigned.
- U.Vic.
 - i) Physics 1.5 units at 100 level
 - ii) With 207, Physics 102*

*If a grade of A or B is obtained in the combination, a student should contact Department of Physics about replacement

UNBC. PHYS 115