Douglas College

EFFECTIVE: SEPTEMBER 2002

CURRICULUM GUIDELINES

A: Division: **Instructional**

B: Department/ Program Area: **Science and Technology**

Date: **07 January 2002**

New Course [ ] Revision [X]

If Revision, Section(s) Revised: **F.L.P.Q**

Date Last Revised: **27 April 1999**

C:	**D:**	**E:**
PHYS 107	**Introductory General Physics 1**	**5**
Subject & Course No.	Descriptive Title	Semester Credits

F: Calendar Description: This is a non-calculus based course in mechanics. 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:

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

[X] College Credit Transfer: Requested [X] Granted [X]

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

College Credit Transfer: Requested (SFU); Granted (UBC/UVic)

SFU SFU PHYS 100 (3) & SFU PHYS (2); DOUG PHYS 107 & DOUG PHYS 207 = SFU PHYS 101 (3), SFU PHYS 102 (3), SFU PHYS 130 (2) & SFU PHYS (2).

UBC UBC PHYS 100 (3); DOUG PHYS 107 & DOUG PHYS 207 = UBC PHYS 100 (3) & UBC PHYS (3). Exempt UBC PHYS 101.

UVIC UVIC PHYS (1.5) 100 lev; DOUG PHYS 107 & DOUG PHYS 207 = UVIC PHYS 102 (3).

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:

vector addition via components; average velocity and instantaneous velocity; average acceleration and instantaneous acceleration; uniformly accelerated motion; free-fall motion; Newton's laws of motion; friction and coefficient of friction; conditions for equilibrium; work-energy theorem; conservation of mechanical energy; conservation of energy; conservation of linear momentum; centripetal acceleration and force; universal law of gravitation; Kepler's law; rolling motion; conservation of angular momentum; elastic deformation of solids; general form of Hooke's law; Hooke's law for springs; simple harmonic motion; wave parameters; superposition principle; resonance; intensity level versus intensity of sound; Doppler effect;

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

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

N: Course Content

1. Mechanics
   Vectors and vector addition; Velocity and acceleration; Uniformly accelerated motion in one dimension; Projectile motion; Newton's laws of motion; Friction; Objects in equilibrium; Work and energy; Linear momentum and collisions; Circular motion kinematics; Centripetal force; Rotational dynamics;
2. Properties of Matter & Waves
   Elastic properties of solids; Hooke's law; Simple harmonic motion; Mechanical wave characteristics; Standing waves; Sound wave intensity; Doppler effect;
3. Laboratory experiments
   Composition of Forces/Static Equilibrium; Uniformly Accelerated Motion; Projectile Motion; Simple Pendulum/Determination of Gravitational Acceleration; Friction; Collisions; Orbital Motion and Centripetal Force; Moment of Inertia; Hooke's Law and Simple Harmonic Motion; Standing Traverse Waves; 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

Cutnell, J.D. and K.W. Johnson; Physics, Fifth Edition, Wiley, 2001

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 30% / maximum of 40%
b) at least two tests administered during the semester - minimum 40% / maximum of 50%; and
c) submitted laboratory reports - 20%

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

Not open for PLAR

Course Designer(s)

Education Council/Curriculum Committee Representative

Dean/Director

Registrar