Grande Prairie Regional College

Department of Science and Technology

PC1240 INTRODUCTORY GENERAL PHYSICS I 3.0 (3-0-3) UT(3)

Lectures	M W	8:30 - 9:50 a.m. J228
Laboratory	R or the next T	2:30 - 5:20 p.m. J103

INSTRUCTOR: Dr. Robert Hunt, P. Eng.

OFFICE: C414

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TEXT: College Physics. Serway and Faughn, 5th Edition

COURSE CONTENT:

Algebra-based course for students in life, environmental, and medical sciences. It guides the student through two distinct types of motion: motion of matter (particles) and wave motion. Vectors, forces, bodies in equilibrium, elasticity and fracture; review of kinematics and basic dynamics; conservation of momentum and energy; circular motion; vibrations; waves in matter; wave optics; sound; black body radiation, photons, de Broglie waves; models of the atom. Examples relevant in environmental, life and medical sciences will be emphasized.

PRE-REQUISITE: Physics 20 or equivalent, Pure Mathematics 30. Physics 30 is strongly recommended.

Credit may normally be obtained for only one of PC1010, PC1020, PC1080, PC1240, PC1440, or PC1310.

MARK DISTRIBUTION:		
Assignments	15%	
Laboratories	20%	
Mid-Term Examination	20%	(Oct. 25/00)
Final Examination	45%	(TBA)

COURSE OUTLINE

Chapter 1	Summary of measurements, units and mathematics review.
Chapter 2	Speed, velocity, and uniform acceleration review.
Chapter 3	Vectors and two dimensional kinematics review.
Chapter 4	Forces, Newton's Laws of Motion, FBDs, friction, equilibrium and dynamics of translational motion review.
Chapter 5	Work, energy, power and Work-Energy Theorem review.
Chapter 6	Impulse, linear momentum, 1 and 2-D collisions.
Chapter 7	Rotational kinematics and linear kinematics, gravitation, and the dynamics of uniform circular motion.
Chapter 8	Rotational dynamics, torque, equilibrium, FBD and center of gravity.

MIDTERM (October 25, 2000 in class)

Chapter 13	Hooke's Law, elasticity, simple harmonic motion, simple oscillations, periodic waves, superposition, interference, and reflection.
Chapter 14	Sound waves, speed of sound, intensity, standing waves, resonance, beats and applications of sound waves.
Chapter 22	Nature of light, speed of light, reflection, refraction and total internal reflection.
Chapter 24	Double-slit interference, diffraction grating, thin films, diffraction, resolution, polarization and Brewster's angle.
Chapter 27	Blackbody radiation, Planck's hypothesis, photoelectric effect, X-rays, Compton effect, photons, wave particle duality of light, de Broglie's hypothesis, uncertainty principle, atomic spectra and energy levels.

LABORATORY COMPONENT

Lab #	Source	Content		R or	T
1	Exp. #1	Graphical and Error Analysis	Sept.	7	12
2	Exp #11	Kinematics	Sept.	14	19
3	Exp. #10	Acceleration Due to Gravity	Sept.	21	26
4	Handout	Vector Addition	Sept.	28	Oct 3
5	Exp. #12	Atwood Pulley	Oct.	5	10
6	Exp. #13	Trans. of Mech. Energy	Oct.	12	17
7	Exp. #14	Collision Ramp	Oct.	19	31
8	Exp. #5	Standing Waves on a String	Nov.	2	7
9	Exp. #6	Speed of Sound in Air	Nov.	16	21
10	Exp. #9	Interference of Light	Nov.	23	28

GRADING GUIDELINES

Percent (Approx.)	Grade
90 - 100	9
80 - 89	8
72 - 79	7
65 - 71	6
57 - 64	5
50 - 56	4
45 - 49	3
26 - 44	2
0 - 25	1

(Cambridge System)