

**Grande Prairie Regional College
Department of Science**

PC1240 PARTICLES AND WAVES 3.0 (3-0-3) UT

Lectures	T R	13:00 - 14:20	H211
Laboratory	W or R	14:30 - 17:20	J103

INSTRUCTOR: Tanvir Sadiq, *Ph.D., P. Eng.*
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TEXT: **Physics:** James S. Walker, 3rd Edition (Pearson – Prentice Hall)

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 PC1080, PC1240, PC1440, or PC1310.

MARK DISTRIBUTION:

Assignments	12%	
Quizzes	3%	
Laboratories	20%	
Mid-Term Examination	20%	(Wednesday, 22 Oct '08, evening)
Final Examination	45%	(TBA)

GRADING GUIDELINES:

Descriptor	Grade	Points	Descriptor	Grade	Points
Excellent 84 – 100%	A+	4.0	Satisfactory 60 – 69 %	C+	2.3
	A	4.0		C	2.0
	A-	3.7		C-	1.7
Good 70 – 83 %	B+	3.3	Poor (54% - 59%)	D+	1.3
	B	3.0	Minimal Pass	D	1.0
	B-	2.7	Fail (≤ 49%)	F	0

LABORATORY COMPONENT

NOTE: LAB INSTRUCTOR IS RESPONSIBLE FOR PROVIDING LAB HANDOUTS

Lab #	Source	Content	Week of
1	Exp. #1	Graphical Analysis	Sept 08
2	Handout	Vector Addition	Sept 15
3	Exp. #3	Non-Uniform Motion	Sept 22
4	Exp. #2	Acceleration Due to Gravity	Sept 29
5	Exp. #4	Atwood's Pulley	Oct 06
6	Exp. #5	Potential and Kinetic Energy	Oct 13
7	Exp. #6	Collision of Ball	Oct 27
8	Exp. #7	Standing Waves on a String	Nov 03
9	Exp. #8	Speed of Sound in Air	Nov 10
10	Exp. #9	Interference of Light	Nov 17

COURSE SYLLABUS

Note: It is strongly recommended that students read the material prior to it being covered in class

Chapter 1	Introduction to Physics
Chapter 2	One-Dimensional Kinematics
Chapter 3	Vectors in Physics
Chapter 4	Two-Dimensional Kinematics
Chapter 5	Newton's Laws of Motion
Chapter 6	Applications of Newton's Laws
Chapter 7	Work and Kinetic Energy (except section 7.3)
Chapter 8	Potential Energy and Conservation of Energy (except section 8.5)
Chapter 9	Linear Momentum and Collisions (except section 9.8)
Chapter 10	Rotational Kinematics and Energy
Chapter 11	Rotational Dynamics and Static Equilibrium
Chapter 12	Gravity (except sections 12.3 and 12.6)
Chapter 13	Oscillations about Equilibrium (except sections 13.7,13.8, and the <i>physical pendulum</i> in 13.6)
Chapter 14	Waves and Sound (except section 14.3)
Chapter 28	Physical Optics : Interference and Diffraction (except sections 28.3 and 28.5)
Chapter 25	Electromagnetic Waves (only sections 25.2, 25.3)
Chapter 30	Quantum Physics