

GRANDE PRAIRIE REGIONAL COLLEGE
DEPARTMENT OF SCIENCE & TECHNOLOGY

PHYSICS 1090
INTRODUCTION TO UNIVERSITY PHYSICS

COURSE OUTLINE WINTER 1998

INSTRUCTOR: Tola Adeodu, Room J209, Ext. 2865

LECTURE: MWF 10:00 - 10:50 a.m. J202

SEMINAR: R 8:00 - 9:20 a.m. J202

LABORATORY: R 3:00 - 5:50 p.m. J103

TOPICS COVERED: Waves and Sound; Interference of Waves; Fluids: Statics
Dynamic; Temperature and Heat; Ideal Gas law and Kinetic
Theory; Thermodynamics; Geometrical Optics; Physical Optics

TEXT BOOK: Physics by Cutnell & Johnson, 3rd Ed.

LAB MANUAL: Physics Lab Manual for 108/109 U. of A. Publication

GRADING(%)	Assignments	10
	Labs	15
	Mid-term Exam (#1)	15 (Scheduled for the last week in February)
	Mid-term Exam (#2)	25 (Scheduled for the 3rd week in March)
	Final Exam	<u>35</u>
	Total	100

DetailsCHAPTER 11; FLUIDS

Mass, density, pressure, gauge pressure, pressure and depth, atmospheric pressure, barometer, Pascal's principle, Archimedes principle, fluids in motion, stream lines, equation of continuity.

Bernoulli's equation, Viscous flow, Poiseuille's equation.

CHAPTER 12; TEMPERATURE AND HEAT

Temperature Scale, Kelvin Scale, Thermometers, linear and volume expansion.

Heat and internal energy, specific heat capacity, Latent heat.

CHAPTER 13; TRANSFER OF HEAT

Conduction, convection and radiation.

CHAPTER 14; THE IDEAL GAS LAW AND KINETIC THEORY

Ideal gas law, Gas behavior, Kinetic theory molecular interpretation of temperature, distribution of mol. speed.

CHAPTER 15; THERMODYNAMICS

Zeroth and first law of thermodynamics

Thermal processes involving pressure, volume and temperature changes especially ideal gases. Second law of thermodynamics, heat engine.

Carnot's Principle and Carnot engine, refrigeration entropy and second law of thermodynamics, order and disorder.

CHAPTER 16; WAVES AND SOUND

Types of waves, speed of waves, mathematics of waves, nature and speed of waves, sound intensity, Doppler effect.

CHAPTER 17; INTERFERENCE OF WAVES

Principle of superposition, constructive and destructive interference of sound waves, diffraction, beat frequency, standing waves, complex sound waves, Fourier Synthesis.

CHAPTER 25: REFLECTION OF LIGHT

Reflection of light by plane and spherical mirror, formation of images in mirrors, mirror equation, magnification

CHAPTER 26: LENSES AND OPTICAL INSTRUMENTS

Refraction of light, Snell's Law, Total internal reflection, Diffraction of light, formation of images by thin lenses, lens equation, magnification, combination of lenses, angular magnification, lens aberrations, telescope and microscope.

CHAPTER 27: PHYSICAL OPTICS

Principle of linear superposition, Huygens's Principle, Young's double-split experiment, thin film interference, Michelson interferometer, diffraction by single slit and double slit.