

JAN. 18 2001

**Grande Prairie Regional College
Department of Science and Technology**

PC 1090 – Introduction to University Physics II
Winter Session, 2001
3(3-1.5-3)UT

Course Outline

This is a non-calculus course in physics for students without Physics 30, to be taken in sequence with PC 1080. Waves, sound, fluids, geometrical and physical optics, heat and thermodynamics.

Prerequisite: PC 1080

Note: Credits may be obtained for only one of PC 1000, PC 1090, 1300 or 1370.

Instructor	Jaime P. Santiago J209 539-2865 santiago@gprc.ab.ca
Lecture	MWF 08:30 – 09:50 J202
Laboratory	R 14:30 – 17:20 J103
Textbook	College Physics, 5 th Edition Raymond Serway and Jerry Faughn Saunders College Publishing
Laboratory Manual	Physics 100, 101, 108, 109 Laboratory Manual Department of Physics University of Alberta
Marks Distribution	Assignments 15% Laboratory Work 20% (Students must pass the lab to pass the course.) Midterm Exam 25% (February 23, 2001) Final Exam 40%

Lecture Topics

Chapter	Lectures/ Days	Topics
9	7	States of matter, deformation of solids, density and pressure, Archimedes' Principle, fluid flow, equation of continuity, Bernoulli's Equation, surface tension, capillary action, viscosity, diffusion
10	3	Temperature, temperature scales, thermometers, thermal expansion, ideal gases, equation of state, Ideal Gas Law, kinetic theory
11	4	Heat, mechanical equivalent of heat, specific heat capacity, phase change, latent heat, calorimetry, heat transfer by conduction, convection and radiation
12	4	Heat and internal energy, Laws of Thermodynamics, thermodynamic processes, Carnot engine, refrigerators, entropy
13	2	Waves, speed, frequency, wavelength, amplitude, waves in a string, superposition of waves, interference, reflection
14	5	Sound, speed of sound, power, intensity, intensity level, Doppler Effect, interference of sound, standing waves in strings and air columns, sources of musical sound, quality of sound, beats, the human ear
22	3	Wave and particle nature of light, speed of light, ray approximation, reflection and refraction, dispersion, Huygens' Principle, total internal reflection
23	5	Plane and spherical mirrors, real and virtual images, mirror equation and ray diagrams, images by refraction, thin lenses, aberrations
24	3	Coherence, interference, Young's double slit experiment, thin films, Newton's rings, Fraunhofer diffraction, single slit diffraction, polarization
25	2	Camera, human eye, simple magnifier, compound microscope, astronomical telescope, Rayleigh criterion for slits and circular apertures, diffraction gratings

Assignments

Assignment No.	Due Date	Problems
1	January 22	Chapter 9 Problems: #8, 15, 18, 65, 30, 38, 41
2	January 29	Chapter 10 Problems: #3, 13, 18, 27, 45, 51
3	February 9	Chapter 11 Problems: #16, 29, 34, 36, 39
4	February 16	Chapter 12 Problems: #5, 11, 21, 30, 33
5	March 9	Chapter 13 Problems: #37, 42, 45 Chapter 14 Problems: #4, 9, 12
6	March 16	Chapter 14 Problems: #21, 27, 33, 42, 44
7	March 26	Chapter 22 Problems: #44, 49, 35 Chapter 23 Problems: #1, 10, 18
8	April 2	Chapter 23 Problems: #23, 46, 48, 54
9	April 9	Chapter 24 Problems: #2, 22, 32, 40, 52
10	Not marked	Chapter 25 Problems: #13, 18, 20, 25, 32

Laboratory Work

Lab. No.	Date	Title
1	January 4	Properties of Fluids
2	January 11	Terminal Velocity
3	January 18	Constant Volume Gas Thermometer
4	January 25	Mechanical Equivalent of Heat
5	February 1	Oscilloscope
6	February 8	Standing Waves on a String
7	February 15	Speed of Sound in Air
8	March 8	Geometrical Optics
9	March 15	Interference
10	March 22	Computers in Physics Labs