

NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY

PHY 232 – GENERAL UNIVERSITY PHYSICS II (5 CR.)

Course Description

Teaches principles of classical physics. Includes mechanics, wave phenomena, heat, electricity, magnetism, and optics, with extended coverage of selected topics. Includes recitation as part of the lecture.

Part II of II. Lecture 4 hours. Laboratory 2 hours. Total 6 hours per week.

Please Note: Credit will not be awarded for both PHY 242: University Physics II and PHY 232: General University Physics II.

General Course Purpose

The purpose of the course is to provide engineers, mathematicians and scientists with the basic concepts of physics that are required for their full development into competent professionals and informed and informing citizens.

The course is normally taken by aspirants to four-year institutions and generally satisfies the basic requirements of such institutions.

Course Prerequisites/Corequisites

Prerequisites: PHY 231 and MTH 264.

Course Objectives

Upon completing the course, the student will be able to:

- Identify which physics principles and concepts are applicable to a given problem
- Apply and critically analyze their observations and measurements
- Use established scientific methods to organize and interpret experimental data
- Communicate effectively on physics related issues.

Major Topics to be Included

- Waves: wave properties, wave equation, interference and diffraction of waves, standing wave patterns
- Sound: sound properties, beats, Doppler effect
- Electrostatics: Coulomb's Law, electric field and electric potential, Gauss' law, capacitors and dielectrics
- Electric Current: Ohm's law, DC circuits, RC circuits, Kirchoff's rules
- Magnetism: magnetic field and magnetic force, Ampere's and Biot-Savart laws
- Electromagnetic Induction: Faraday's law, inductors and inductance, AC circuits
- Electromagnetism: Maxwell's equations, electromagnetic waves and their properties
- Geometric Optics: reflection and refraction, Snell's Law, mirrors and lenses, optical instruments
- Wave Optics: interference and diffraction of light waves