

Course Title	Course Code	Number of Study Hours			Year	Level	Prerequisites
		Theoretical	Laboratory	Credit			
General Physics	204PHYS	3	2	4	2 nd	4 th	----

(1) **Brief Course Description**

This is an introductory physics course that is designed for non-physical science students. The course covers a variety of subjects starting with dimensions, units and vectors in different coordinate systems. The course then discusses the laws of motion alongside Newton's laws. The course details the analysis of one dimensional linear motion and its analogue of circular motion for rigid bodies. The course then shifts gears to the subject of Elasticity and fluid dynamics and introduces some basic topics such as elastic properties of materials, pressure, Archimedes principle and Bernoulli's equation.

(2) **Course Objectives**

This course is designed to provide students with:

- Principles of dimensions, units and vectors in different coordinates.
- Newton laws of motion and their application.
- Detailed analysis of one dimensional motion in both linear and rotational systems.
- Concepts of linear momentum and collisions, pressure, buoyant force, electric current, and specific resistance, speed of sound and Doppler Effect.
- Applications of Newton's laws of motion, Archimedes' principle and Ohm's law.
- Skills to solve problems regarding the physical principles included.
- Physical experiments to be performed and analyzed.

(3) **Course Contents**

Theoretical Part:

- Dimensions and units (dimensional analysis and conversion of units).
- Vectors (addition, subtraction, multiplication and components of a vector).
- Motion in one dimension (one dimensional motion with constant acceleration).
- Newton's laws of motion and solve problems regarding their applications.
- Motion in two dimensions (projectile motion).
- The work, the power and the energy.
- Linear momentum and collisions.
- Pressure, buoyant force and Archimedes' principle.
- Electric current, Ohm's law and specific resistance.
- Speed of sound in solids, speed of sound in fluids and Doppler's effect.

Experimental Part:

- Determination of the speed of sound in air.
- Verification of Ohm's law and series and parallel connections of resistors.
- Verification of Archimedes principle.
- Verification of the gravitational free fall law.
- Study of the resultant of forces.
- Study of the projectile motion.
- Determination of the viscosity of liquids.
- Determination of the surface tension of liquids.
- Verification of Hook's law.
- Determination of the acceleration due to gravity using simple pendulum.

(4) **Assessment Criteria**

- Periodic Exams: 15%
- Homeworks, in class activities and quizzes: 15%
- Laboratory Work: 20%
- Final Exam: 50%

(5) **Course Teaching Strategies**

- Lectures, Reports and Essay Assignments, Homework, and Web-based Assignments.

(6) **Text Book**

- Physics for Scientists & Engineers with Modern Physics; 7th edition, Serway, Saunders Golden Sunburst Series, 2007.

(7) **Reference Books**

- University Physics; H. Young and R. Freedman, Addison-Wesley Publishing Company, Inc., 11th edition, 2004.
- Fundamentals of Physics; Halliday, Resnik and Walker, John Wiley and Sons Inc., 2007.