PHYS 101 Principles of Physics l

This course provides an overview of the fundamental principles of physics in areas of mechanics. Topics include standards and units, vectors and coordinate systems, kinematics, dynamics of single particles, work energy and power, conservation on energy, dynamics of system of particles, collisions, and rotational kinematics and dynamics. The course is designed for students requiring calculus-based physics.

(Pre-requisites: None)

Course Learning Outcomes:

By the end of the course, students will be able to:

1. Explain generalized knowledge and understanding of the main theories and concepts behind kinematics, dynamics, equilibrium of rigid bodies, work, energy, collisions, and rotation.
2. Relate the main theories and concepts behind kinematics, dynamics, equilibrium of rigid bodies, work, energy, collisions, and rotation, to simple real-life situations.
3. Solve real life problems using the theories and concepts of kinematics, dynamics, equilibrium of rigid bodies, work, energy, collisions, and rotation

Textbook & Course Materials:

- Principles of Physics, by Walker, Halliday and Resnick, 10th Edition (Wiley)

Course Content:

1. Motion in one dimension
2. Vectors
3. Motion in two dimensions
4. Laws of motion
5. Applications of the laws of motion
6. Work and Energy
7. Kinetic and potential energies
8. Conservation of energy
9. Linear momentum and collisions in one dimension
10. Linear momentum and collisions in two dimensions
11. Rotational Motion of a Rigid Object About a Fixed Axis