

## Course Outcomes:-

Dr. Sutanu Kumar Chandra

### Title: PHYH-C II: MECHANICS

After completion of this course, student will be able to

- Understand basic Newtonian mechanics, a fundamental aspect of classical physics including inertial Reference frames, Galilean transformations and Galilean invariance, variable- mass motion, motion of a projectile in Uniform gravitational field.
- Learn to handle more realistic problem like problem of system of particles and Centre of Mass motion.
- Learn and apply various conservation principles including Work and Energy Theorem, Potential Energy, Energy diagram, Stable and unstable equilibrium.
- Enumerate Conservative and non- conservative forces.
- Handle collision problem both in C.M frame and Lab frame.
- Understand and handle problem related to motion in non-inertial frame especially rotational dynamics giving emphasis over various pseudo forces.
- Understand a very important two body problem giving emphasis over central force, laws of gravitation and planetary motion.
- Explain the properties of bulk material such as Elasticity and Fluid Motion.
- Understand and analyze the ubiquitous phenomena of harmonic oscillation and its corresponding resonance phenomena and related matters.
- Understand the basic principles of special theory relativity, relativistic kinematics and dynamics.

### **PHYH-C II LAB: MECHANICS**

After completion of this course, student will be able to

- Use vernier caliper, screw gauge and travelling microscope. (*Enhances the basic measuring ability*)
- Study the random error in observations. (*To have an idea about error in measurement and how to minimize it*)

- Study the Motion of Spring and determine (a) Spring constant, (b) acceleration due to gravity and (c) Modulus of rigidity. (*To get an experimental feeling and experience about oscillation and elasticity*)
- Determine the Moment of Inertia of regular shaped body. (*To have a practical knowledge about rigid dynamics*)
- Determine Coefficient of Viscosity of water by Capillary Flow Method (Poiseuille's method).
- Determine the Modulus of Rigidity of a Wire by dynamical method.
- Determine the elastic Constants of a wire by Searle's method.
- Determine the value of  $g$  using Kater's Pendulum. (*To get an idea of compound pendulum*)
- Determine the value of Young's Modulus by Flexure method.