University Physics 1 (PHY2413) – Course Objectives

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- Solve problems using standard procedures for numerical calculations in the MKS system, and determine the correct number of significant figures in the final answer.
- Solve problems involving motion: distance/displacement, speed/velocity, acceleration in one-dimensional situations.
- Solve problems involving motion: distance/displacement, speed/velocity, acceleration in two or three dimensional situations.
- Manipulate vectors in two or three dimensions.
- Use free-body diagrams to find the net force on an object.
- Consider static and kinetic friction acting on an object.
- Solve problems involving work and energy (conservative and non-conservative forces).
- Calculate the center of mass of various two dimensional objects (point-wise as well as integration).
- Consider collisions in one and two dimensions - elastic and inelastic.
- Solve problems involving rotational kinematics and dynamics.
- Calculate moment of inertia for various three dimensional systems (point-wise as well as integration).
- Consider simple orbits in gravitational system.
- Solve problems involving static equilibrium (no net force, no net torque).
- Solve problems involving density of fluids, pressure under fluids, Bernoulli effects.
- Solve problems involving the ideal gas law and the kinetic theory of gases.
- Solve problems involving calorimetry including phase changes.
- Solve problems involving heat flow (conduction, convection, radiation).