PHY 101 GENERAL PHYSICS I (MECHANICS) CCMAS

Space and time; units and dimension,

Vectors and Scalars,

Differentiation of vectors (displacement, velocity and acceleration)

kinematics

Newtons laws of motion (inertial frames, impulse, force and action at a distance, momentum conservation).

Relative motion.

Application of Newtonian mechanics

Equation of motion

Conservation principles in Physics (conservative forces, conservation of linear momentum, kinetic energy and work, potential energy)

System of particles

Centre of mass

Rotational motion (torque, vector product, moment, rotation of coordinates axes and angular momentum)

Coordinates systems

Polar coordinates

Conservation of angular momentum

Circular motion

Moments of inertia (gyroscopes, and precession)

Gravitation (Newton's Law of Gravitation, Kepler's laws of planetary motion, gravitational potential energy, escape velocity, satellites motion and orbits)