

Course Content Phy.DSCT1: Mechanics & Properties of Matter		Hrs
<b>Unit – 1</b> (13 hours of teaching includes 3 hours of activities)		
Chapter No. 1	<b>Units and measurements:</b> System of units (CGS and SI), measurement of length, mass and time, dimensions of physical quantities, dimensional formulae. Minimum deviation, errors.	4
Chapter No. 2	<b>Momentum and Energy:</b> Work and energy, Conservation of linear momentum, Conservation of energy with examples, Motion of rockets	4
Chapter No. 3	<b>Special Theory of Relativity:</b> Constancy of speed of light. Postulates of Special Theory of Relativity. Length contraction. Time dilation. Relativistic addition of velocities. Derivation of $E = mc^2$	5
Topics for Self-study	Variable mass problem & Rocket motion Twin paradox	
<b>Suggested Activities</b>		
Activity No. 1	i). Measure diameters of small balls of different size and estimate their volumes. ii). Measure lengths of nails of different size. iii). Measure volume of a liquid. iv). Measure distances and put the result both in CGS and SI units in 2, 3 and 4 significant figures. Mention the precession of the measurement. v). Estimate standard deviations wherever possible.	
Activity No. 2	Understand conservation of energy in every day examples like i) What happens in solar energy conversion panels ii) Pushing an object on the table it moves iii) Moving car hits a parked car causes parked car to move. In these cases, it is known that energy is conserved. How? Understand and verify if possible.	
<b>Unit – 2</b> (13 hours of teaching includes 3 hours of activities)		
Chapter No. 4.	<b>Laws of Motion:</b> Newton's Laws of motion, Dynamics of single particle and a system of particles, Centre of mass.	3