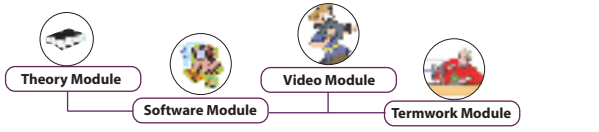
Learning Resources

**Learning/Training Resources with Computer Aided Instructions in subject of**

# Applied Mechanics

SoftTech ENGINEERS PVT.LTD. Introduces, Global e-Learning System in Education & Training in the form of Learning Resources with Computer Aided Instructions




**System Requirement:-** IBM-PC Compatible with Window-OS, 128 MB RAM/Multimedia Kit

## Theory module

**Features :** Theory, Figures, Photographs, Animations with controller, Highlighter tool, Note creation facility, Systematic page navigation, Printing facility.

## List of Topics

### Introduction

Definitions of Mechanics, Statics, Dynamics, Body, Types of Body, Force, Resolution of force, Law of Parallelogram, Law of Triangle, Lami's Theorem, Transmissibility of Force, Equilibrium of Collinear Forces, Varigons Theorem and its applications, Beam and its types, Types of load, Types of Supports, Free Body Diagram.

### Pin Jointed Plane Frames

Truss, plane truss, frame, Assumptions in Analysis of Pin - Jointed Perfect Trusses, Condition for rigid or Perfect truss, Method of Joints, Method of Sections, Analysis of frames, Special cases in trusses.

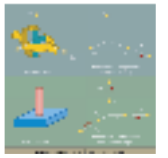
### Centre of Gravity

Definition, Centroid of uniform lamina, C. G. of Standard figures, Centroid of triangular lamina, Centroid of area of circular sector, Centroid of Quarter circle, Centroid of Semi circle, Centroid of a Composit Length of Bent Wire, Moment of Inertia of a Lamina, Perpendicular Axis Theorem, Parallel Axis Theorem, MI of rectangular lamina, Polar Moment of Inertia, MI of Triangular lamina, MI of Circular lamina, MI of Semicircular lamina, Radius of Gyration, Mass moment of inertia of various bodies.

### Friction

Definition, Dry Friction and Fluid Friction, Limiting Friction, Laws of Dry Friction, Angle of Friction, Cone of Friction, Angle of Repose, Belt Friction, Screw Jack.

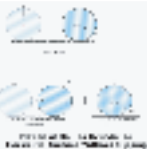
### Force systems in space



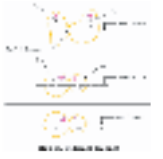
Introduction, Rectangular Components of a Force, Defining a Force by its magnitude and two points on its line of action, Position Vector, Resultant of Concurrent Forces in Space, Equilibrium of a Particle in Space, Dot Product of Two Vectors, Vector or Cross Product, Moment of a Force, Resultant of System of Parallel, Forces, Resultant of Nonconcurrent Nonparallel System of Forces in Space, Equilibrium of General System of Forces in Space.

### Kinematics of Particles

Introduction, Kinematics of Particles, Rectilinear motion at Uniform acceleration, Rectilinear motion at varying acceleration, Motion Curves, Important Features, Projectiles, Curvilinear Motion of a Particle, Normal and Tangential Acceleration, Relative Motion, Relative Motion between two Particles.



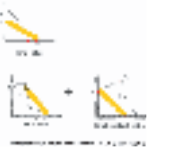
### Kinetics of Particles



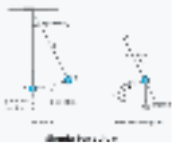
Newton's Law (D' Alembert's Principle), Work and Energy, Work of a Constant Force in Rectilinear Motion, Principle of Work Energy, Principle of Conservation of Energy, Impact and Collision, Coefficient of Restitution, Impulse and Momentum.

### Kinematics of Rigid Bodies

Plane Motion of Rigid Bodies, Translation, Rotation, General Plane Motion, Motion at Varying Angular Acceleration, Motion at Constant Angular Acceleration, Linear and Angular Velocity, Instantaneous Centre of Rotation (I.C.R.) in Plane Motion, Location of Instantenous Centre.



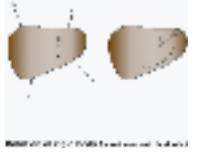
### S. H. M. and Compound Pendulum



Simple Harmonic Motion (S.H.M.), Pendulum Motion, Simple pendulum Compound Pendulum, Mass Moment of Inertia.

### Kinetics of Rigid Bodies

D'alemtert's Principle - Rigid Body in Translation, Rotation of Rigid body about noncentroidal axis, Rotation of Rigid body about centroidal axis, Rigid Body in General Plane Motion, Statement of Work-Energy Principle, K.E. of a body Rotating about Fixed axis through C.G.



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