

# VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

T.Y. B.Sc.

## Mathematics M E C H (CAN) (MECHANICS)

Methods of plane statics, Triangle of forces, Lamy's theorem, Work and Potential Energy, Forces which do no work, Virtual work, Infinitesimal displacement of a rigid body parallel to a fixed plane, Sufficient condition for the equilibrium of a rigid body moving parallel to a fixed plane, Potential Energy.

Mass centre, methods of decomposition and symmetries for finding mass centre of a rigid body. Pappus theorems, Gravitations forces, Laws of friction, Flexible cable, Suspension bridge, Equation of common catenary:.

Plane Kinematics, Tangential & Normal components of velocity and acceleration, Radial and Transverse components of velocity & acceleration, Hodograph.

Methods of plane dynamics, Motion of a particle, Linear and angular momentum of a particle and a system of particles, Principle of Conservation of Energy.

Application in plane dynamics, Projectile without resistance, Parabolic trajectory, Limits of range of trajectory, The Harmonic Oscillator, Simple Pendulum, Effect of disturbing force, Damped oscillations, Forced oscillations.

### **The course is covered by the following reference books :**

1. Synge & Griffith: Principles of Mathematics, McGraw Hill Book Co.
2. A.G. Takwal & P.S. Puranil:: Introduction to Classical Mechanics, Tata McGraw Hill.
3. A.S. Ramsey : Statics. Cambridge university Press
4. A.S. Ramsey : Dynamics, Cambridge I. University Press.
5. R.I.. Steins : Mechanics, Berncs & Nibwe inc.
6. S.i.. Loney, : Staties & T, Surjeet Prakashan.
7. S.I.. Loney : Dynamies , Surjee. Prakashan.