

BASICS OF CIVIL ENGINEERING(3-0-1)

MODULE-I (10 classes)

Mechanics: Concurrent forces on a plane – Composition and resolution of forces and equilibrium of concurrent coplanar forces, Method of projections, Methods of moment, Friction. Parallel forces in a plane- Two parallel forces, General case of parallel forces, Center of parallel forces in a plane and center of gravity- centroids of composite plane figure and curves, Distributed parallel forces in a plane. General case of forces in a plane- composition of forces in a plane and equilibrium of forces in a plane.

Module-II (10 classes)

Plane trusses- method of joints and method of sections. Moments of Inertia- Plane figure with respect to an axis in its plane and perpendicular to the plane- parallel axis theorem, Moment of Inertia of material bodies.

Rectilinear Translation- Kinematics- Principles of Dynamics- D'Alemberts Principles, Momentum and impulse, Work and Energy- impact

Module-III (8 classes)

Building Material and Building Construction: Bricks: Brick as a construction material and its importance, qualities of a good brick, Stone: classification, composition and characteristics, Cement: Classification, tests for cement, uses of cement, types of cement, Concrete: Quality of mixing water, Workability, vibration of concrete, concrete mix design, Grade and strength of Concrete. Building Components and their basic requirements, Foundation: Types of foundation, spread foundations, pile foundations, Mortar, Stone masonry, brick masonry, roof, floors, building services: air conditioning, fire protection, ventilation.

Module-IV (8 classes)

Surveying: Linear measurement and chain survey: Use of chains and tapes for measurement of correct length of lines, direct and indirect ranging, Compass surveying: Use of prismatic compass, bearing of a line. Local attraction, Introduction to modern surveying instruments EDM and Total Station.

Transport, Traffic and Urban Engineering: Introduction to planning and design aspects of transportation engineering, different modes of transport, highway engineering, rail engineering, airport engineering, traffic engineering, urban engineering

TEXT BOOKS

1. Engineering Mechanics by S Timoshenko, D.H Young and J.V. Rao, McGraw Hill
2. Basic Civil Engineering, S. Gopi, Pearson
3. Building Construction, Sushil Kumar, Standard Publishers Distributors
4. Surveying and Levelling by R. Subramanian, Oxford University Press

REFERENCE BOOKS

1. Engineering Mechanics by K.L. Kumar, McGraw Hill
2. Engineering Materials, S.C. Rangwala, Charotar Publishing House
3. Building Material and Construction, G C Sahu, Joygopal Jena, McGraw Hill
4. Surveying Vol-1 by R Agor, Khanna Publishers
5. Basic Civil Engineering, M.S. Palanichamy, McGraw Hill