Department of Civil Engineering and Applied Mechanics
Lesson Plan
B. Tech Ist year
CE-10513
Fundamentals of Civil Engineering and Applied Mechanics
Semester: II

UNIT–1: Forces and Equilibrium (10 Hours)

Lecture	Topics
L1	Introduction to Applied Mechanics, types of forces
L2	Coplanar concurrent forces – graphical methods
L3	Coplanar concurrent forces – analytical methods
L4	Non-concurrent coplanar forces
L5	Free Body Diagram (FBD), Force diagram
L6	Bow's notation and equilibrium equations
L7	Conditions of equilibrium – numerical problems
L8	Plane trusses – assumptions and classification
L9	Analysis of trusses – Method of Joints
L10	Analysis of trusses – Method of Sections

UNIT–2: Centre of Gravity & Moment of Inertia (8 Hours)

Lecture	Topics
L11	Concept of centroid and centre of gravity
L12	Centroid of simple plane areas
L13	Centroid of composite sections
L14	Moment of inertia – area and mass
L15	MOI of standard sections
L16	MOI of composite sections
L17	Radius of gyration
L18	Product of inertia & principle axes (intro)

UNIT–3: Support Reactions & Analysis of Beams (8 Hours)

Lecture	Topics
L19	Types of beams – SSB, cantilever, overhanging
L20	Types of supports – roller, hinged, fixed
L21	Types of loads – point load, UDL, UVL, couple
L22	Support reactions of statically determinate beams
L23	Introduction to shear force & bending moment

Lecture	Topics
L24	SFD & BMD for cantilever beam
L25	SFD & BMD for simply supported beam (point load)
L26	SFD & BMD for UDL and couple

SURVEYING / GEOMATICS
UNIT–4: Introduction to Civil Engineering (5 Hours)

Lecture	Topics
L27	Historical development of Civil Engineering
L28	Role of Civil Engineering in nation building
L29	Branches of Civil Engineering & their scope
L30	Interrelationship between civil engineering branches
L31	Basic civil engineering materials & applications

UNIT–5: Introduction to Geomatics / Plane Surveying (5 Hours)

Lecture	Topics
L32	Introduction to geomatics & plane surveying principles
L33	Linear and angular measurements
L34	Vertical distance measurement & leveling
L35	Contours – characteristics & applications
L36	Modern surveying equipment, ICT & software applications

Prof. and Head
CE-AMD