

### Teaching Plan (MOM)

Lect. No.	Unit	Unit Code	Content
1.	I	101	Introduction, stress, strain, types of stresses.
2.	I	102	Stress and strain diagram for brittle & ductile material, elastic limit, Hooks law, modulus of elasticity, modulus of rigidity.
3.	I	103	factor of safety, analysis of tapered rod
4.	I	104	analysis of composite section
5.	I	105	thermal stress and strain
6.	I	106	Longitudinal strain & stress, lateral stresses and strains, Poisson's ratio, volumetric stresses and strain with uni-axial, bi-axial & tri-axial loading
7.	I	107	bulk modulus, relation between Young's modulus and modulus of rigidity, Poisson's ratio and bulk modulus
8.	I	108	Definition of principal planes & principal stresses, analytical method of determining stresses on oblique section when member is subjected to direct stresses in one plane
9.	I	109	analytical method of determining stresses on oblique section when member is subjected to direct stresses in mutually perpendicular two planes
10.	I	110	analytical method of determining stresses on oblique section when member is subjected to shear stress and direct stresses in two mutually perpendicular planes
11.	I	111	Mohr's circle for representation of principal stresses
12.	I	112	Mohr's circle for representation of principal stresses
13.	II	201	Types of beam (cantilever beam, simply supported beam, overhung beam etc.), Types of loads (Concentrated and UDL). sign conventions for bending moment and shear force
14.	II	202	shear force and bending moment diagrams for different types of beams subjected to different types of loads
15.	II	203	shear force and bending moment diagrams for different types



			of beams subjected to different types of loads
16.	II	204	shear force and bending moment diagrams for beams subjected to couple
17.	II	205	Relation between load, shear force and bending moment.
18.	II	206	Pure bending, theory of simple bending with assumptions & expressions for bending stress
19.	II	207	derivation of bending equation
20.	II	208	bending stresses in symmetrical sections, section modulus for various shapes of beam sections.
21.	II	209	bending stresses in symmetrical sections, section modulus for various shapes of beam sections.
22.	II	210	Shear stresses in beams
23.	III	301	Deflection & slope of cantilever beams subjected to concentrated load, UDL
24.	III	302	Deflection & slope of simply supported beams subjected to concentrated load, UDL
25.	III	303	Deflection & slope of overhung beams subjected to concentrated load, UDL
26.	III	304	Relation between slope, deflection & radius of curvature.
27.	III	305	Macaulay's method to determine deflection of beam
28.	III	306	Macaulay's method to determine deflection of beam
29.	III	307	Macaulay's method to determine deflection of beam
30.	III	308	strain energy stored in a body when it is subjected to gradually applied load, suddenly applied loads & impact loads
31.	III	309	strain energy stored in a body when it is subjected to gradually applied load, suddenly applied loads & impact loads
32.	III	310	strain energy stored in a body when it is subjected to gradually applied load, suddenly applied loads & impact loads



33.	III	311	Strain energy stored in bending.
34	III	312	Strain energy stored in torsion.
35.	IV	401	Derivation of torsion equation with the assumptions made in it.
36.	IV	402	Torsion shear stress induced in the shaft, when it is subjected to torque
37.	IV	403	Strength and rigidity criterion for design of shaft.
38.	IV	404	Strength and rigidity criterion for design of shaft.
39.	IV	405	Torque transmitted by solid & hollow circular shaft
40.	IV	406	Torque transmitted by solid & hollow circular shaft
41.	IV	407	Equivalent twisting and bending moment in shaft when it is subjected to bending moment, torque & axial load.
42.	IV	408	Equivalent twisting and bending moment in shaft when it is subjected to bending moment, torque & axial load.
43.	V	501	Failure of long & short column, slenderness ratio, assumptions made in Euler's column theory, end conditions for column
44.	V	502	Expression for crippling load for various end conditions of column and derivation on column with both ends hinged
45.	V	503	Expression for crippling load for various end conditions of column and derivation on column with both ends hinged
46.	V	504	Effective length of column, limitations of Euler's formula, Rankine formula.

