

TEACHING PLAN FOR THEORY

Subject Teacher: Mr. S. H. Shaikh.

Subject: BCVL203:Strength of Materials		Class: SY B.Tech.	Branch: Civil	Year 2017-2018
Lecture No	Scheduled Date	Topics to be covered on the scheduled date		
		Syllabus Discussion, Discussion on course objective & course outcome		
Unit I : Mechanical Properties and Uniaxial Problems (08 Hrs)				
1		Types of force distribution, Concept of stress and strain,		
2		Stress strain behavior of ductile		
3		brittle material in uniaxial state of stress.		
4		Elastic,.Plastic and strain hardened zones stress - strain relations,		
5		Elastic constants, Relation between elastic constants.		
6		Uniaxial loading and deformation of simple cases of statically indeterminate problems under axial loading.		
7		Uniaxial loading and deformation of simple cases of statically indeterminate problems under axial loading.		
8		Thin walled pressure vessel, Cylindrical and spherical subjected to internal pressure		
Unit II : Axial Force, Shear Force & Bending Moment Diagrams (09 Hrs)				
1		Concept of free body diagram, Types of loads,		
2		Determination of axial forces and Bending moment at a section,		
3		axial forces and Bending moment at a section,		

4		Axial forces SF and BM diagram in beams and simple frames,
5		Axial forces SF and BM diagram in beams and simple frames,
6		Axial forces SF and BM diagram in beams and simple frames,
7		Differential relation between shear force and bending moment,
8		Differential relation between shear force and bending moment,
9		Relation between load and shear force.
Unit III : Stresses in Beam (09 Hrs)		
1		Bending stresses in simple beam, Assumptions and derivation of simple bending,
2		Theory relation between bending moment,
3		Bending stress and curvature.
4		Homogeneous and composite beams.
5		Shear stresses in simple beams,
6		Shear flow and shear stress distribution,
7		Shear Stress in composite beams.
8		Combined effect of bending and axial force
9		Combined effect of bending and axial force.

Unit IV : Torsion of Shafts (09 Hrs)

1		Torsion of circular sections,
2		Assumptions and derivation of relations between torsional moment,
3		derivation of relations between torsional moment,
4		Shear stresses and angle of twist.
5		Torsional stress in solid and Circular sections,
6		Torsional stress in solid and Circular sections,
7		Torsion in thin walled hollow section,
8		Closely coiled helical springs. Leaf spring.
9		Closely coiled helical springs. Leaf spring.

Unit V : Deflection of Beam (08 Hrs)

1		Derivation of differential equation of moment curvature relation,
2		Derivation of differential equation of moment curvature relation,
3		Derivation of differential equation of moment curvature relation,
4		Differential equation relating deflection and moment shear and load,.
5		Differential equation relating deflection and moment shear and load,.
6		Differential equation relating deflection and moment shear and load,.

7		Deflection of simple beams by integration
8		Deflection of simple beams by integration
Unit VI : State of Stress In Two Dimensions (09 Hrs)		
1		State of stress in two dimensions, Differential equation of equilibrium,
2		Transformation of stresses, Principal stresses, Maximum shear stresses,
3		Mohr's circle, Combined bending and torsion,
4		Mohr's circle, Combined bending and torsion,
5		Combined effect of Torsion and Shear.
6		Combined effect of Torsion and Shear.
7		Shear flow in thin walled sections,
8		concept of shear center of thin walled section,
9		Unsymmetrical bending.