COLLEGE OF TECHNOLOGY AND ENGINEERING

DEPARTMENT OF CIVIL ENGINEERING

2 YEAR BE I SEMESTER SESSION 2015-16

1. Course Code : **CE 211(AE,CE,EE,MI)**
2. Course Title : **STRENGTH OF MATERIAL**
3. Credit : 3(2+1)
4. Theory Lecture Outlines :

1. Stress and strain, engineering properties
2. Saint-Venant's Principle. Stress strain diagrams
3. mechanical properties of materials, elasticity and plasticity.
4. Shear stress and strain, pure shear, complementary shear
5. Linear elasticity and Hooke's law. Poison's ratio, volumetric strain relation bulk modulus of elasticity
6. Elastic constants between elastic modulie. Stress and strain in axially loaded members
7. Temperature stresses and effects
8. *Analysis of Stress and Strain :* Stress at a point, stress components
9. Stresses on inclined planes. Plane stress and strain
10. Stresses on inclined planes. Plane stress and strain
11. Mohr's circle representation of plain stress and strain*:*
12. Mohr's circle representation of plain stress and strain*:*
13. Principle stresses and strains, maximum shear stresses. Hooke's law for plain stress.
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15. Stresses in thin cylinder and special shells subjected to internal & external pressures
16. Stresses in thin cylinder and special shells subjected to internal & external pressures
17. Bending moment and shear force, relation between load, Shear force and bending moment
18. Bending moment and shear force diagrams for simply supported, and
19. Cantilever
20. overhang beams under static loading of different types viz. point loads,

Uniformly distributed loads, linearly varying loads, Pure bending

21. overhang beams under static loading of different types viz. point loads, Uniformly distributed loads, linearly varying loads, Pure bending
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23. Theory of simple bending of initially straight beams.
24. Theory of simple bending of initially straight beams.
25. Flexural stresses in beams. Built up and composite beams
26. Flexural stresses in beams. Built up and composite beams
27. Shear stresses in beams of Rectangular, Circular and I-section. Shear formula, effect of shear strain.
28. Torsion of solid and hollow circular shafts
29. Torsion of solid and hollow circular shafts
30. Numerical

Suggested Books & References

1.Junarkar S.B. and Shah H.J., 'Mechanics of Structures' Vol.-I Charoter Publishing, Anand.

2. Punima B.C., 'Strength of Materials and Mechanics of Structures', Vol-I, Standard Publisher distributors, New Delhi

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