



COLLEGE OF TECHNOLOGY AND ENGINEERING

DEPARTMENT OF CIVIL ENGINEERING
2 YEAR BE I SEMESTER SESSION 2015-16

1. Course Code : **CE 212**
2. Course Title : **FLUID MECHANICS**
3. Credit : 4(3+1)
4. Theory Lecture Outlines :
 1. *Fluids*: Definition, Ideal fluids
 2. Real fluids. Newtonian and non-Newtonian fluids
 3. *Properties of Fluids*: Units of measurement
 4. Mass density, Specific weight, Specific volume, Specific Gravity
 5. Surface tension and Capillary. Compressibility and Elasticity
 6. *Hydro-Statics*: Pressure at a point in a static fluid (pressure variation in compressible static fluid; atmospheric pressure)
 7. Gauge pressure, vacuum pressure,
 8. absolute pressure, Manometers, Bourdon pressure gauge.
 9. Forces acting on immersed plane surface
 10. Centre of pressure
 11. forces on curved surfaces.
 12. *Buoyancy*: Conditions of equilibrium of floating bodies
 13. meta-centre
 14. metacentric height
 15. *Hydro-Kinematics*: Types of Flows: Steady and unsteady.
 16. uniform and non-uniform, stream lines
 17. path lines, stream tubes, principles of conservation of mass
 18. Torsion of solid and hollow circular shafts. equation of continuity, acceleration of fluid particles local and connective
 19. Rotational and irrotational motions.
 20. *Dynamics of Fluid Flow*: Euler's equations of motion in Cartesian co-ordinate and its integration.
 21. Bernoulli's equation for incompressible fluids
 22. assumptions in Bernoulli's equation
 23. Energy correction factor.

24. *Application of Energy Equation:* Application of energy equation for simple problem
25. pitot tube, orifice meter,
26. venturi meter,
27. *Momentum Equation:*
28. Development of momentum equation by control volume concept,
29. Momentum correction factor
30. *Application of Momentum Equation:*
31. Application of momentum equation for simple problem
32. Force on a pipe bend.
33. *Elementary concept of Boundary Layer.*
34. Force on immersed bodies
35. drag and lift force
36. drag and lift coefficients
37. Numerical
38. Numerical
39. Revision
40. Revision
41. Revision
42. Revision
43. Revision
44. Revision
45. Revision

Suggested Books & References

1. H.M. Raghunath, 'Fluid Mechanics'.
2. P.N. Modi & S.M. Seth, 'Hydraulics & Fluid Mechanics'.

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