**VEER SURENDRA SAI UNIVRSITY OF TECNOLOGY, BURLA**

**Lesson plan**
**Semester: 3rd.**
**Subject: Fluid Dynamics**

| Lecture | Module | Topic |
|---|---|---|
| 1 | 1 | Introduction |
| 2 | 1 | Density, specific weight specific gravity, problems |
| 3 | 1 | Temperature dependency on viscosity of liquids and gases |
| 4 | 1 | Problems |
| 5 | 1 | Cohesion and adhesion, Surface tension and capillary tube |
| 6 | 1 | Capillary rise and capillary depression |
| 7 | 1 | Problems |
| 8 | 1 | Pressure, Pascal's law, Hydrostatic law |
| 9 | 1 | Pressure measuring instruments for measuring atmospheric pressure |
| 10 | 1 | Pressure at a point in a compressible and incompressible fluid |
| 11 | 1 | Pressure measurement, simple manometer, piezometer . |
| 12 | 2 | Vertical single column manometer, inclined single column manometer |
| 13 | 2 | Differential U-tube manometer, problems |
| 14 | 2 | Inverted U-tube manometer, problems |
| 15 | 2 | Centrifugal centrifuge, Gravity decanters, centrifugal decanters |
| 16 | 2 | Types of flow |
| 17 | 2 | Continuity equation |
| 18 | 2 | Boundary layer theory |
| 19 | 2 | Velocity potential function and stream function and relation between them |
| 20 | 2 | Darcy Weisbach equation |
| 21 | 2 | Hagen-Poiseulli's equation |
| 22 | 3 | Major energy losses |
| 23 | 3 | Minor energy losses |
| 24 | 3 | Problems |
| 25 | 3 | Dimensional analysis, Rayleigh's method and Buckingham's $\pi$ theorem |
| 26 | 3 | Dimensionless numbers, problems, HGL,TEL |
| 27 | 3 | Derivation of Bernoulli's equation derivation |
| 28 | 3 | Problems |
| 29 | 3 | Modified Bernoulli's equation derivation |
| 30 | 3 | Problems |
| 31 | 3 | Pump work in of Bernoulli's equation |
| 32 | 4 | Problems |
| 33 | 4 | Drag and lift studies |
| 34 | 4 | Problems |
| 35 | 4 | Terminal velocity |
| 36 | 4 | Criteria for settling regime |
| 37 | 4 | Problems |
| 38 | 4 | Free settling and Hindered settling |
| 39 | 4 | Packed bed |
| 40 | 4 | Fluidization |

Signature of the Faculty Member: Counter Signature of H.O.D
Date:

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Date: