

Th-3 Fluid Mechanics
Name: Suchismita Behera, Lect. (GF)

GOVT. POLYTECHNIC, NAYAGARH

LESSON PLAN

4th SEMESTER MECHANICAL ENGINEERING (2023-24)

SUBJECT- FLUID MECHANICS (TH.3)

(w.e.f 16/01/2024)

TOTAL PERIOD-60
THEORY-4P/WEEK

NAME OF FACULTY: SUCHISMITA BEHERA, Lect. (GF)

| Sl No. | week | Day | Topics to be covered |
|--------|-----------------|---------------------|---|
| 1 | 1 st | 1 st day | Define fluid |
| | | 2 nd day | Description of fluid properties like Density, Specific weight |
| | | 3 rd day | Specific gravity, specific volume |
| | | 4 th day | Solve simple problems |
| Sl No. | week | Day | Topics to be covered |
| 2 | 2 nd | 1 st day | Definitions and Units of Dynamic viscosity, |
| | | 2 nd day | Definitions and Units of kinematic viscosity |
| | | 3 rd day | Surface tension Capillary phenomenon |
| | | 4 th day | Solve simple problems |
| Sl No. | week | Day | Topics to be covered |
| 3 | 3 rd | 1 st day | Definitions and units of fluid pressure, |
| | | 2 nd day | What is pressure intensity and pressure head ? |
| | | 3 rd day | Statement of Pascal's Law. |
| | | 4 th day | Concept of atmospheric pressure, gauge pressure, vacuum and absolute pressure |
| Sl No. | week | Day | Topics to be covered |
| 4 | 4 th | 1 st day | What is Pressure measuring instruments Manometers (Simple) |
| | | 2 nd day | What is Pressure measuring instruments Manometers (Differential) |
| | | 3 rd day | Bourdon tube pressure gauge (Simple Numerical) |
| | | 4 th day | Solve simple problems on Manometer. |
| Sl No. | week | Day | Topics to be covered |
| 5 | 5 th | 1 st day | Definition of hydrostatic pressure |
| | | 2 nd day | Total pressure and centre of pressure on immersed bodies (Horizontal Bodies) |
| | | 3 rd day | Total pressure and centre of pressure on immersed bodies (Vertical Bodies) |
| | | 4 th day | Solve Simple problems |
| Sl No. | week | Day | Topics to be covered |
| 6 | 6 th | 1 st day | What is Archimedes principle? |
| | | 2 nd day | What is concept of buoyancy? (Definition only) |
| | | 3 rd day | Meta center and meta centric height (Definition only) |
| | | 4 th day | Concept of floatation |
| Sl No. | week | Day | Topics to be covered |

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| 7 | 7 th | 1 st day | What is fluid flow? Types of fluid flow |
| | | 2 nd day | What is Continuity equation? |
| | | 3 rd day | Continuity equation (Statement and proof for one dimensional flow) |
| | | 4 th day | What is Bernoulli's theorem (Statement and proof) |
| SI No. | week | Day | Topics to be covered |
| 8 | 8 th | 1 st day | What is Venturimeter, pitot tube |
| | | 2 nd day | Applications and limitations of Bernoulli's theorem |
| | | 3 rd day | Solve simple problems |
| | | 4 th day | Solve simple problems |
| SI No. | week | Day | Topics to be covered |
| 9 | 9 th | 1 st day | Define orifice |
| | | 2 nd day | Flow through orifice |
| | | 3 rd day | Orifices coefficient & the relation between the orifice coefficients |
| | | 4 th day | Classifications of notches & weirs |
| SI No. | week | Day | Topics to be covered |
| 10 | 10 th | 1 st day | Discharge over a rectangular notch or weir |
| | | 2 nd day | Discharge over a triangular notch or weir |
| | | 3 rd day | Simple problems on above |
| | | 4 th day | Simple problems on above |
| SI No. | week | Day | Topics to be covered |
| 11 | 11 th | 1 st day | Definition of pipe. |
| | | 2 nd day | Loss of energy in pipes. |
| | | 3 rd day | Energy loss through pipe due to friction |
| | | 4 th day | What is Head loss due to friction? |
| SI No. | week | Day | Topics to be covered |
| 12 | 12 th | 1 st day | Head loss due to friction: Darcy's and Chezy's formula (Expression only) |
| | | 2 nd day | Head loss due to friction: Chezy's formula (Expression only) |
| | | 3 rd day | Solve Problems using Darcy's and Chezy's formula. |
| | | 4 th day | Solve Problems using Darcy's and Chezy's formula. |
| SI No. | week | Day | Topics to be covered |
| 13 | 13 th | 1 st day | What is Hydraulic gradient? |
| | | 2 nd day | What is total gradient line? |
| | | 3 rd day | What is jet? |

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| | | 4 th day | What is Impact of jet on fixed flat plates? |
| SI No. | week | Day | Topics to be covered |
| 14 | 14 th | 1 st day | What is Impact of jet on moving vertical flat plates? |
| | | 2 nd day | Derivation of work done on series of vanes and condition for maximum efficiency. |
| | | 3 rd day | Derivation of work done on series of vanes and condition for maximum efficiency. |
| | | 4 th day | Numerical Problem solving |
| SI No. | week | Day | Topics to be covered |
| 15 | 15 th | 1 st day | Numerical Problem solving |
| | | 2 nd day | Impact of jet on moving curved vanes, |
| | | 3 rd day | Illustration using velocity triangles, |
| | | 4 th day | Derivation of work done, efficiency of jet |

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