
# MICRO PROJECT-I (17251109)

| Category | Title | Code | Credits-1 | | |
|---|---|---|---|---|---|
| Project Based Learning-PBL | Micro Project–I | **17251109** | L | T | P |
| | | | - | - | 2 |

## List of topics

1. Design and fabrication of a wind tunnel to study the flow around a model of a car or airplane.
2. Investigation of the flow of a fluid through a packed bed of particles.
3. Design and fabrication of a water turbine to study the effects of blade shape on turbine efficiency.
4. Perform the "Float and Sink" experiment at home (with available materials)and Interpret the finding.
5. Estimate the factors that affect the settling rate. Calculate/estimate the settling rate for given materials based on experimental study at home.
6. To estimate the angle of repose of different given samples.
7. Design of laminar flow device.
8. Design and fabricate a composite bed filtration unit for water treatment.
9. Design of hydraulic crane.
10. Design of beaker decantation & pipette analysis experiment.
11. Design of a simple water wheel
12. Investigation of flow separation around blunt bodies
13. Working model of a venturimeter.
14. Performing Cumulative and differential screen analysis for a given sample.
15. Building Cox Chart and Duhring's Plot for a given data
16. Building Psychrometric chart for a given system and set of data.
17. Design of Bernoulli's Mist Sprayer.
18. Design of Reynold's Experiment.
19. Demonstrate working of notches.
20. Experimental Determination of terminal settling velocity in the free settling regime.
21. Investigation of dry and wet classification methods.
22. Design of an air cyclone.

**COURSE OUTCOMES:**


**After completion of course students will be able to:**

**CO1:** Formulate problems in the field of flow, separation by reviewing research literature
**CO2:** Design innovative solutions for complex flow processes, mechanical operations
**CO3:** Apply appropriate modern engineering and IT tools, to address complex engineering tasks.
**CO4:** Function effectively as both an individual contributor and a team member or leader demonstrating collaboration and leadership skills.
**CO5:** Apply engineering ethics and managerial communication principles to effectively manage projects.

**Course Articulation Matrix**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 1 | | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | | 2 |
| CO2 | 1 | 1 | 2 | | 1 | 1 | | | | 1 | | 1 | 1 | 2 |
| CO3 | 2 | 3 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 3 |
| CO4 | 3 | 1 | 2 | 2 | 2 | 2 | 2 | | 3 | 1 | 1 | 2 | 3 | 3 |
| CO5 | 2 | 3 | 3 | 3 | 1 | 1 | 1 | 1 | 2 | 3 | 2 | 1 | 3 | 3 |

1-Slightly;2-Moderately;3 –Substantially