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| Image result for nit meghalaya logo | | | | **National Institute of Technology Meghalaya**  An Institute of National Importance | | | | | | | | | | | | | | | | | | | | | | **CURRICULUM** | | | | |
| Programme | | | | **Bachelor of Technology in Civil Engineering** | | | | | | | | | | | | | Year of Regulation | | | | | | | | | **2019-20** | | | | |
| Department | | | | **Civil Engineering** | | | | | | | | | | | | | Semester | | | | | | | | | **IV** | | | | |
| Course  Code | | Course Name | | | | | | | | **Pre requisite** | | | | Credit Structure | | | | | | | | Marks Distribution | | | | | | | | |
| L | | T | | | P | C | | Continuous Assessment | | | | | | | Total | |
| **CE 254** | | **Fluid Mechanics Lab** | | | | | | | | **Nil** | | | | **0** | | **1** | | | **2** | **2** | | **10 experiment** | | | | **10** | | | **100** | |
| Course  Objectives | | 1. To provide practical knowledge in verification of principle of fluid flow and measuring pressure, discharge, velocity and understanding frictional loss in pipe flow domain. | | | | | | | | | | Course Outcomes | | | | CO1 | | | Student will be able to describe the various physical properties of fluids. | | | | | | | | | | | |
| 1. To develop understanding about hydrostatic law, principle of buoyancy and stability of a floating body and application of mass, momentum and energy equation in fluid flow. | | | | | | | | | | CO2 | | | Student will be able to explain the fluid behaviour at rest. | | | | | | | | | | | |
| 1. To give fundamental knowledge of fluid, its properties and behavior under various conditions of internal and external flows. | | | | | | | | | | CO3 | | | Student will be able to understand the concepts of fluid behaviour in motion. | | | | | | | | | | | |
| 1. To inculcate the importance of fluid flow measurement and its applications in Industries. | | | | | | | | | | CO4 | | | Student will be able to understand the applications of various flow measuring devices to measure the flow. | | | | | | | | | | | |
|  | | | | | | | | | | CO5 | | | Student will be able to calculate and analyze the flow through pipes. | | | | | | | | | | | |
| No. | COs | | Mapping with Program Outcomes (POs) | | | | | | | | | | | | | | | | | | | | | | Mapping with PSOs | | | | | |
| PO1 | | PO2 | PO3 | PO4 | PO5 | PO6 | | PO7 | | PO8 | | PO9 | | | PO10 | | | PO11 | | PO12 | | PSO1 | | PSO2 | | | PSO3 |
| 1 | CO1 | | 3 | | 0 | 0 | 0 | 0 | 0 | | 0 | | 0 | | 0 | | | 0 | | | 0 | | 0 | | 0 | | 3 | | | 0 |
| 2 | CO2 | | 3 | | 0 | 0 | 0 | 0 | 0 | | 0 | | 0 | | 0 | | | 0 | | | 0 | | 0 | | 0 | | 3 | | | 0 |
| 3 | CO3 | | 3 | | 0 | 0 | 0 | 0 | 0 | | 0 | | 0 | | 0 | | | 0 | | | 0 | | 0 | | 0 | | 3 | | | 0 |
| 4 | CO4 | | 3 | | 0 | 0 | 0 | 0 | 0 | | 0 | | 0 | | 0 | | | 0 | | | 0 | | 0 | | 0 | | 3 | | | 0 |
| 5 | CO5 | | 3 | | 0 | 1 | 0 | 0 | 0 | | 0 | | 0 | | 0 | | | 0 | | | 0 | | 0 | | 0 | | 3 | | | 0 |
| SYLLABUS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | Syllabus (List of Experiments) | | | | | | | | | | | | | | | | | | | | | | | Hours | | | | COs | | |
|  | Introduction | | | | | | | | | | | | | | | | | | | | | | | 02 | | | |  | | |
|  | To determine the metacentric height of a ship model. | | | | | | | | | | | | | | | | | | | | | | | 02 | | | | **CO1,**  **CO2,**  **CO3**  **CO4,**  **CO5** | | |
|  | Verification of Bernoulli’s theorem. | | | | | | | | | | | | | | | | | | | | | | | 02 | | | |
|  | To calibrate a venturimeter and to determine its coefficient of discharge. | | | | | | | | | | | | | | | | | | | | | | | 02 | | | |
|  | To calibrate an orifice meter and study the variation of coefficient of discharge. | | | | | | | | | | | | | | | | | | | | | | | 02 | | | |
|  | To study the flow over V-notch (weir) and Rectangular notch and to find their coefficient of discharge. | | | | | | | | | | | | | | | | | | | | | | | 02 | | | |
|  | To determine the velocity using pitot tube. | | | | | | | | | | | | | | | | | | | | | | | 02 | | | |
|  | To study the variation of coefficient of discharge with the Reynolds number. | | | | | | | | | | | | | | | | | | | | | | | 02 | | | |
|  | To determine the coefficient of friction of pipes of different diameters. | | | | | | | | | | | | | | | | | | | | | | | 02 | | | |
|  | To obtain the surface profile on the total heads distribution of a vortex. | | | | | | | | | | | | | | | | | | | | | | | 02 | | | |
|  | Revision and doubt clearing sessions | | | | | | | | | | | | | | | | | | | | | | | 04 | | | |
| **Total Hours** | | | | | | | | | | | | | | | | | | | | | | | | **24** | | | |  | | |
| **Essential Readings** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. SK Som, Gautam Biswas, Suman Chakraborty, :Introduction to Fluid Mechanics and Fluid Machines” McGraw Hill Publications, Third Edition, 2010 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Dr. R K Bansal, “A text book of Fluid mechanics & Hydraulics machines”, Laxmi Publications, Revised Ninth Edition, 2010 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Modi P.N. and Seth S.M., “Hydraulics and Fluid Mechanics”, Standard Book House, 21st Edition, 2017 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Er. R K Rajput, “A text book of Fluid Mechanics”, S Chand publications, 9th Edition, 2017 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Supplementary Readings** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Streeter, V.L. and Wylie E.B., “Fluid Mechanics”, McGraw Hill.9 th Edition 2017 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Modi P.N. and Seth S.M., “Hydraulics and Fluid Mechanics”, Standard Book House.21st Edition.2017. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Kumar K.L., “Fluid Mechanics”, S. Chand & Co.22nd Edition 2016. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Jain A.K., “Fluid Mechanics”, Khanna Publisher.23rd Edition 2010. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. White B.F., “Fluid Mechanics”, McGraw Hill.7 th Edition 2010. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Frabzini J., “Fluid Mechanics with Engineering Applications”, McGraw Hill.10th Edition 2001. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |