

FLUID MECHANICS AND HYDRAULIC MACHINES LABORATORY

IV Semester: ME								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
AMEC16	Core	L	T	P	C	CIA	SEE	Total
		0	0	3	1.5	30	70	100
Contact Classes: Nil		Tutorial Classes: Nil		Practical Classes: 36			Total Classes: 36	
Prerequisite: There are no prerequisites to take this course.								
<p>I. COURSEOVERVIEW: The purpose of this laboratory is to strengthen and enhance the understanding of the basics of fluid mechanics and Hydraulic machines. The experiments here are designed to demonstrate the applications of the basic mechanics principles and to provide a lot of intuitive and physical understanding of the theory. The most objective is to introduce a spread of classical experimental and diagnostic techniques, and also the principles behind these techniques. This laboratory exercise additionally provides practice in making engineering judgments, estimates and assessing the reliability of your measurements, skills that are important in all engineering disciplines.</p> <p>II. COURSEOBJECTIVES: The students will try to learn: I. The effects of fluid properties on a flow system. II. Fluid flow patterns and describe continuity equation. III. The utilization of measuring devices and fluid mechanics principles in design. IV. Performance parameters of a given hydraulic turbine, centrifugal and reciprocating pump.</p> <p>III. COURSE SYLLABUS: Week-1: DETERMINATION OF COEFFICIENT OF DISCHARGE OF VENTURI METER Week-2: DETERMINATION OF COEFFICIENT OF DISCHARGE OF ORIFICE METER Week-3: DETERMINATION OF FRICTION FACTOR Week-4: VERIFICATION OF BERNOULLI'S THEOREM Week-5: PERFORMANCE TEST ON PELTON WHEEL TURBINE Week-6: PERFORMANCE TEST ON FRANCIS TURBINE Week-7: PERFORMANCE TEST ON KAPLAN TURBINE Week-8: PERFORMANCE TEST ON RECIPROCATING PUMP Week-9: PERFORMANCE TEST ON CENTRIFUGAL PUMP Week-10: IMPACT OF JET ON VANES Week-11: PERFORMANCE TEST ON MULTI STAGE CENTRIFUGAL PUMP Week-12: LOSS OF HEAD DUE TO SUDDEN CONTRACTION</p> <p>IV. REFERENCE BOOKS: 1. D.S. Kumar, "Fluid Mechanics and Fluid Power Engineering", Kotaria & Sons, Reprint, 2013. 2. D. Rama Durgaiah, "Fluid Mechanics and Machinery", New Age International, 1st Edition, 2002. 3. Banga, Sharma, "Hydraulic Machines", Khanna Publishers, 6th Edition, 2001. 4. Dr. R K Bansal, "A Text Book of Fluid Mechanics and Hydraulic Machines", Laxmi Publications, 9th Edition, 2015.</p>								

V. WEB REFERENCES:

1. <http://www.iare.ac.in>
2. https://cphbooks.in/pdf/Flued_Mechanics_Machinery.pdf