Techno College of Engineering Agartala

An Engineering College Approved by AICTE, MHRD, Govt. of India
Affiliated to Tripura University (A Central University),
Department of Mechanical Engineering

List of Laboratory Experiments

Fluid Machines Lab							
Course Code	**Hours / Week**				**Maximum Marks**		
PC ME 606	L	T	P	C	**CIA**	**SEE**	**Total**
	0	0	2	1	40	60	100
Number of classes: 20 Hours			**Prerequisites: Fluid Machines**				
Branch: ME			**Semester: VI**				

Course overview:

This laboratory course provides hands-on experience with various fluid machinery used in mechanical engineering, focusing on turbines, pumps and compressors. Students will conduct experiments to measure hydraulic forces, analyze fluid flow behavior, and determine efficiencies of different fluid machines such as Pelton, Francis, and Kaplan turbines, centrifugal and reciprocating pumps, and rotary and two-stage compressors. Through data collection, analysis, and interpretation, students will understand the performance characteristics and efficiency parameters of fluid systems, including the impact of jets on vanes. The lab strengthens theoretical knowledge through practical applications and develops analytical and experimental skills.

Course objectives:

i. To understand and measure the hydraulic force exerted by a water jet on various types of vanes through experimental setups.
ii. To determine the performance and efficiency of different turbines by analyzing experimental data collected from Pelton, Francis, and Kaplan turbines.
iii. To calculate the overall efficiency and study the performance characteristics of different types of pumps, including centrifugal and reciprocating pumps.
iv. To evaluate the efficiency and operational characteristics of compressors, including two-stage and rotary types, and assess the impact of jet forces on vane mechanisms.

Course outcomes:

CO Number	CO Description	K-level
CO-1	Explain the procedure for collecting data to find out the hydraulic force of water jet on vanes.	K-2
CO-2	Calculate the collected data to find out the efficiency of turbines.	K-3
CO-3	Find out the overall efficiency of pump.	K-3
CO-4	Analyze collected data to find out the efficiency of compressors.	K-4
Sl. No.	**EXPERIMENT NAME**	**CO**
1.	Study the impact of jet on Vanes.	CO-1
2.	Study the Performance characteristics of Pelton Turbines.	CO-2

3.	Study the Performance characteristics of Francis Turbines.	CO-2
4.	Study the Performance characteristics of Kaplan Turbines.	CO-2
5.	Study the characteristics of centrifugal pumps.	CO-3
6.	Study the characteristics of reciprocating pumps.	CO-3
7.	Study the characteristics of two stage air compressors.	CO-4
8.	Study the characteristics Rotary air compressors.	CO-4