



# 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

Refrigeration and Air-conditioning Lab							
Course Code	Hours / Week				Maximum Marks		
PCME607	L	T	P	C	CIA	SEE	Total
	0	0	2	1	40	60	100
<b>Number of classes: 24 Hours</b>		<b>Prerequisites: Refrigeration and Air Conditioning</b>					
<b>Branch: ME</b>		<b>Semester: VI</b>					

### Course overview:

The course is designed to provide students with hands-on experience and practical skills in the field of Refrigeration and Air conditioning. The lab complements theoretical concepts learned in the concurrent refrigeration and air conditioning theory course. Through a series of structured experiments, students gain an in-depth understanding of fundamental refrigeration cycles, system components, performance evaluation techniques, and diagnostic procedures. Emphasis is placed on the operation, maintenance, and troubleshooting of various refrigeration and air conditioning systems, enabling students to develop practical competency in real-world applications.

### Course objectives:

1. To impart practical knowledge of various refrigeration and air conditioning systems such as vapor compression, vapor absorption, steam jet, and ice plants through demonstration and performance evaluation experiments.
2. To develop the ability to measure, analyze, and calculate key performance parameters like Coefficient of Performance (COP), tonnage capacity, power consumption, and psychrometric properties, using standard instruments and tools.
3. To enable students to understand the construction, working, and load design aspects of RAC systems in both domestic and commercial applications, including the design and evaluation of residential/commercial air conditioning systems.

### Course outcomes:

CO Number	CO Description	K-level
CO-1	Implement refrigeration cycles in refrigeration system.	K-2
CO-2	Evaluate performance of Vapour compression refrigeration system and Vapour absorption refrigeration system.	K-5
CO-3	Analyze different psychrometric processes on general cycle air conditioning trainer.	K-4
CO-4	Perform in split air-conditioner and window air conditioner.	K-4
Sl. No.	EXPERIMENT NAME	CO
1.	Demonstration of Vapour compression refrigeration system and Vapour absorption refrigeration system.	CO-1
2.	Determination of the COP of Vapour compression refrigeration system.	CO-2
3.	Demonstration of the COP of Vapour absorption refrigeration system.	CO-2
4.	Study of domestic refrigerator and to determine % running time at different thermostat settings.	CO-2



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5.	Study the working principle of steam jet refrigeration system.	CO-2
6.	Study of different psychrometric terms and processes	CO-3
7.	To understand construction and working of window air-conditioner/ split air-conditioner and to determine its capacity	CO-3
8.	Determine the COP, tonnage capacity and current consumption of an Ice plant	CO-3
9.	Design of Air Conditioning System and load calculation for residential and commercial buildings.	CO-4
10.	Study of measurement devices of all experimental setups used in RAC laboratory.	CO-4