Course Type	Course Code	Name of Course	L	T	P	Credit
DP	MEC 309	Heat Power and Refrigeration Lab	0	0	2	2

Course Objective

This course deals with understanding the principles and practical applications and carrying out performance evaluation experiments related to the internal combustion engine and refrigeration and air-conditioning.

Learning Outcomes

On successful completion of this course, students will learn:

- Basic principles of measurements in heat power and refrigeration.
- Use of basic equipment for carrying out performance and exhaust emission characteristics of I. C. engine
- Use of basic equipment for carrying out performance evaluation of refrigeration and air-conditioning systems.

Unit No.	Topics to be Covered	Laboratory	Learning Outcome
1	Performance study on VCR Engine	1	Understanding the effect of compression ratio on the performance of an engine.
2	Computerized performance test on VCR Engine	1	Understanding the use of computers and computerized performance evaluation of an engine.
3	Morse Test on multi-cylinder petrol Engine	1	Understanding the principle and measurement of indicated power of an engine by a simple method.
4	Performance study of Turbo-charged Diesel Engine	1	Understanding the construction and operation of a turbocharger and performance characteristics of a turbocharged engine.
5	Determination of emission characteristics of an engine using Exhaust Gas Analyzer	1	Understanding the principles and use of exhaust gas analyzer to evaluate emission characteristics of an engine.
6	Performance evaluation of a mechanical heat pump when a capillary tube is acting as an expansion device.	1	Understanding the principles and use of a capillary tube and performance evaluation of a heat pump.
7	Performance evaluation of a mechanical heat pump when the thermostatic expansion valve is acting as an expansion device.	1	Understanding the principles and use of a thermostatic expansion valve and performance evaluation of a heat pump.
8	Study of different Psychrometric processes	1	Understanding the principles and applications of various psychrometric processes.
9	Performance evaluation of summer air-conditioning test rig.	1	Understanding the use of air-conditioning test rig to evaluate the performance of different air-conditioning test rig.

10	Study of cut models of different components of a vapor compression refrigeration unit.	1	Understanding the construction and use components used in a practical refrigeration system.
11	Performance test of a vapor absorption test rig.	1	Understanding the principles, use, and performance evaluation of a vapor absorption test rig.

Text Books / References:

1. Internal Combustion Engines, V. Ganesan, 4th edition, 2012, Tata McGraw Hill Publication
2. Introduction to Refrigeration and Air conditioning – R.C Arora, 2012, PHI Publication