MME 303L: IC Engines Lab

Programme: B. Tech. (MME) Year: 5TH Semester: V sem, ODD Course: Core Credits: 1
Hours: 2 (per week)

Course Context and Overview (100 words):

The objective of the Lab is to provide the students with practical knowledge of fundamentals of the fluid statics, dynamics and fluid machinery e.g. Hydraulics turbines, pumps etc. This will help the students to develop the skill in understanding the working principles, mechanisms and applications of the basic elements or components of the fluid or hydraulic machines. The further detailed objectives are as following:

1. To understand the basic concept and calculate fuel properties e.g. calorific value, density etc. for IC engine applications.
2. To understand and calculate the performance parameters through conducting load test on SI engines
3. To understand and calculate the performance parameters through conducting load test on CI engines with different modes.
4. To understand and calculate the performance parameters through conducting load test on Reciprocating compressor.

Prerequisites Courses: Engineering Thermodynamics and theory part of IC Engines

(Course name and course code)

Course outcomes (COs):

On completion of this course, the students will have the ability to:	**Experiment No.**
CO1 Understand and calculate important fuel properties of IC engines	6,7
C02 Determine the performance parameters through conducting load test on SI engines	3, 8

C03 Determine the performance parameters through conducting load test on CI engines under different modes	1,4, 8
C04 Determine the performance parameters through conducting load test on Reciprocating compressor.	5

Course Topics: (List of Experiment for IC engines Lab)

S. No.	Name of the experiment	Hours	Student Development
1.	To study the Cut section model and to determine the valve timings	2	Employability and Skill development
2.	To Study the performance characteristics of single cylinder four stroke manual diesel engine	2	Employability and Skill development
3.	To Study the performance characteristics of Multi cylinder four stroke petrol engine	4	Employability and Skill development
4.	To Study the performance characteristics of single cylinder four stroke diesel engine with open ECU	4	Employability and Skill development
5.	To Study the performance characteristics of Reciprocating Compressor	4	Employability and Skill development
6.	To study the bomb calorimeter and determine the calorific value of a liquid and/or solid fuel	2	Employability and Skill development
7.	To study and determine the density and viscosity of a liquid fuel	2	Employability and Skill development
8.	To study and hands-on practice on AVL Boost Software	2	Employability and

			Skill development

Textbook references (IEEE format):

Text Book:

1. Ganesan V, "Internal combustion Engines", Tata McGraw Hill Pub. Co. Ltd., 3rd Edition, 2007.
2. Heywood John B, "Internal combustion Engines Fundamentals", McGraw Hill, Latest Edition.

Reference books:

1. Pulkrabek W. W, "Engineering Fundamentals of the Internal Combustion Engine", PHI Learning Private Limited, Latest Edition.
2. Mathur M. L and Sharma R. P, "Internal Combustion Engines", Dhanpat Rai & Sons, Latest Edition

Additional Resources (NPTEL, MIT Video Lectures, Web resources etc.): NPTEL, MIT

Evaluation Methods:

Item	Weightage (%)
Internal sessional assessment (Lab work with report)	60
End term practical Examination	40

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