
III Year B.Tech. Mechanical Engg. I- Semester	L	T	P	To	C
	-	-	3	3	2

ME333 FUELS & I.C. ENGINES LAB**Course Description & Objectives:**

The main objective of this lab is to develop an idea of fuel properties and their variation with temperature, determination of kinematic viscosity and calorific value of fuels, understanding of basic internal combustion engine performance, determination of friction power and volumetric efficiency of I.C. engines and the use of multi-stage compression.

Course Outcomes:

After the completion of this course, the student should be able to:

- 1. Understand the complete operation of 2 stroke and 4 stroke I.C engines which can be further confirmed through V.T.D and P.T.D*
- 2. Find the performance of 2-S and 4-S engines and the variation of various performance parameters with load and speed.*
- 3. Know how to balance the heat energy available in engine cylinder after the combustion process.*
- 4. Understand the working and performance evaluation of mechanical power consuming devices like compressors.*
- 5. Analyze the performance of the variable compression ratio engine with computerized set up which enables the understanding of pressure variation with crank angle during a cycle of operation.*
- 6. Find the kinematic viscosity of fuels and its variation with temperature.*

I. FUELS & LUBRICANTS :

1. Determination of Flash and Fire points of Liquid Fuels / Lubricants: Pensky martens apparatus
2. Carbon Residue Test : Solid/ Liquid Fuels
3. Determination of Viscosity : Liquid Lubricants & Fuels : Saybolts viscometer, Redwood Viscometer, Engler Viscometer.
4. Determination of Calorific Value: Solid/Liquid/Gaseous Fuels: Bomb Calorimeter, Junker Calorimeter.
5. Grease Penetration Test.

II. I.C. ENGINES :

1. I.C. Engines Valve Timing Diagram (Diesel Engine)
2. I.C. Engines Valve Timing Diagram (Petrol Engine)

3. I.C. Engines Performance Test (4 – S Diesel Engines)
4. I.C. Engines Performance Test (2 – S Petrol Engines)
5. Evaluation of Engine friction by conducting morse test on 4-S Multi cylinder Petrol Engine and retardation and motoring test on 4-S diesel engine.
6. I.C. Engines Heat Balance Sheet.
7. Performance Test on Variable Compression Ratio Engines, economical speed test.
8. Performance Test on Reciprocating Air-Compressor Unit
9. Study of Boilers
10. Dis-assembly / Assembly of Engines.

Note : A minimum of total 12 Experiments to be completed by a student.

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ME335 MANUFACTURING DRAWING & INSTRUMENTATION LAB

Course Description & Objective:

To provide basic knowledge in the preparation of production drawings and to give exposure on calibration of various instruments.

Course Outcomes:

1. Able to aware of various types of measurements, requirement of calibrations, instruments used errors in measurement etc.
2. Able to perform accurate measurements and measuring instrument for any engineering system.

I. Production Drawing :

Limits and Fits : Types of fits, exercises involving selection / interpretation of fits and estimation of limits from tables.

Form and Positional Tolerances : Introduction and indication of the tolerances of form and position on drawings, deformation of runout and total runout and their indication.

Surface roughness and its indication : Definitions - finishes obtainable from various manufacturing processes, recommended surface roughness on mechanical components.