

1. Preamble

This course enables the students to analyze the performance and emission characteristic of a spark ignition and compression ignition engine. It helps a student to identify the effect of pollutants on human health, environment and their measurement and control.

2. Pre-requisite

1151AU107	I.C Engines
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3. Links to other courses

- Automotive fuels, lubricants and coolants

4. Course Educational Objectives

Students undergoing this course are expected to

- Impart the fundamental knowledge in different types of dynamometers used for performance testing.
- Understand the concept of valve and port timing diagrams and their significance in internal combustion engines.
- Develop the ability to conduct performance testing of various types of internal combustion engines and to evaluate various performance parameters
- Study and analysis of engine performance characteristics and engine emissions

5. Course Outcomes

Upon the successful completion of the course, learners will be able to

CO Nos.	Course Outcomes	Level of learning domain (Based on revised Bloom's)
CO1	Plot and analyze engine performance characteristic	S4
CO2	Perform exhaust gas analysis and comment on adverse implications on environment	S3

6. Correlation of COs with Programme Outcomes :

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	H	L	H	L	H	L				L	L		H	H
CO2	H	L	H	L	H	L				L	L		H	H

H- Strong; M-Medium; L-Low

7. List of Experiments

1. Study of Hydraulic, Electrical and Eddy Current Dynamometers.
2. Valve Timing Diagram & Port Timing Diagram.
3. Performance and Emission Test on Multi-Cylinder SI Engine.
4. Performance and Emission Test on Multi-Cylinder CI Engine.
5. Retardation Test on I.C. Engines.
6. Heat Balance Test on Automotive Multi-Cylinder SI Engine.

7. Heat Balance Test on Automotive Multi-Cylinder CI Engine.
8. Morse Test on Multi-Cylinder SI Engine.
9. Study of Effect of Carbon Monoxide, Hydrocarbons and Nitrogen Oxides Emissions on Environment.
10. Study of P- θ and P-V Diagrams for IC Engine with Piezo-electric Pick Up, Charge Amplifier, Angle Encoder and PC.

TOTAL = 30 periods