

COURSE CODE	COURSE TITLE	L	T	P	C
1151AE320	THERMODYNAMICS LABORATORY	0	0	2	1

Course Category:

Programme core

a. Preamble:

This course indulges with experimental techniques for the understanding of basic thermodynamics concepts.

b. Pre- requisites:

- Basic mechanical engineering
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c. Link to Other Courses

- Nil
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d. Course Educational Objectives

Students undergoing this course are expected:

- To study energy transformations and thermodynamic relationships applied to flow and non-flow processes in refrigeration cycles using experiments.
- To introduce the concept of IC engines operation and also estimate the heat transfer properties of solid material.

e. Course outcomes:

On successful completion of this course students will be able to

CO Nos.	Course Outcomes	Level of learning domain (Based on revised Bloom's)
CO1	Estimate performance of IC engines using experiments	K2,S3
CO2	Estimate properties of simple heat engines	K2,S3
CO3	Estimate flash and power point of the fuel	K3,S3
CO4	Understand the thermal conductivity and thermal resistances	K2,S3

(S1-Factual, S2-Conceptual, S3-Procedural, S4-Metacognitive)

f. CORRELATION OF COS WITH PROGRAMME OUTCOMES:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	H		H	L	H	H	H	L			
CO2	H	H		H	L	H	H	H	L			
CO3	H	H		H	L	H	H	H	L			
CO4	H	H		H	L	H	H	H	L			

. H- High; M-Medium; L-Low

g. List of experiments

1. Performance test on a 4-stroke diesel engine
2. Valve timing of a 4 – stroke diesel engine
3. Port timing of a 2-stroke petrol engine
4. Determination of effectiveness of a parallel flow heat exchanger
5. Determination of effectiveness of a counter flow heat exchanger
6. Determination of flash point and fire point of a fuel
7. COP test on a vapour compression refrigeration test rig
8. COP test on a vapour compression air-conditioning test rig
9. Determination of thermal conductivity of solid.
10. Determination of thermal resistance of a composite wall.
11. Determination of emissivity of solid.
12. Determination of viscosity of a fuel.

Total Periods: 30