THERMODYNAMICS-II (ME-221)

Pre-requisite: None
Credit Hours: 03
Contact Hours: 48

RECOMMENDED BOOK(S)

AppliedThermodynamicsforEngineeringTechnologists,byT.D.EastopandA.McConkey
Thermodynamics, anEngineering Approach, By YunusA. Cengel,MichaelA.BolesMcGraw-Hill
FundamentalsofEngineeringThermodynamics, byM.J.Moranand H.O.Shapiro,JohnWiley&Sons

REFERENCE BOOK(S)

Fundamentals ofThermodynamics**,** By Sonntang,Borgnakke,VanWylenJohnWiley&Sons

COURSE OBJECTIVES

Tointroduceturbo-machinery (Turbines,compressorsandenginesetc.)
Tostudythebehaviorofidealandrealgasmixtures.
Understandingofdifferentthermodynamicsystemsandtodeal with real-worldengineering problems inorder toimprovetheperformance ofsuchsystems

S. No.	CLO/PLOS MAPPING	DOMAIN	PLO
1	**Analyze** the combustion reactions of different air-fuel mixtures and their enthalpy of formation.	C4	02
2	**Compare** and **Contrast** technical processes in compressors, Boiler, Nozzles and Turbines, as well as important cycles such as those in different engineering components.	C4	04
3	**Explain** and **discuss** internal combustion engines, its parts and its types.	C2	02

COURSE CONTENTS

Mixture with chemical reaction: Combustion reaction equations, stoichiometric chemical reaction, air-fuel ratio, rich and lean mixtures, enthalpy of formation.
Compressors: classification and working principles, single stage and multi stage Compressor compressors, inter-cooling, efficiencies and P-V diagrams of velocity diagrams of centrifugal compressors, Reciprocating performance characteristics and working regimes.
Boilers: generation of steam through boilers, classification and configurations of boilers and their applications, boiler efficiencies and heat balance sheet.

Nozzles: Introduction to nozzles, flow through steam nozzle and its efficiencies, their classification working principles.
Turbines: Steam turbine, their classification & working principles.
Introduction to internal combustion engines: Two and four-stroke engines,SI and CI engines, carburetion and fuel injection system.