

Government Polytechnic Gariyaband Dist- Gariyaband

Department of Mechanical Engineering

LESSON PLAN

Session :- 2024-25(July-Dec)

Name of Faculty :- LALIT KUMAR SAHU

Course :- Diploma

Branch/Semester :- Mechanical 3rd Sem

Total Class Per Week :- 05

Subject Name & Code :- Thermal Engineering 2037373 (037)

S.No	Unit	Topic	Planned Date	Execution Date	Remark
1.	UNIT 1 Basic Concepts of Thermodynamics	1.1 Basic Concepts – Thermodynamics definition, systems, properties, work, heat, energy, thermodynamic equilibrium, quasi-static process, Zeroth law	7, 9, 12, 14, 16 Sep 2024		
2.		1.2 First Law of Thermodynamics – First law, applications, steady flow energy equation, applications to boiler, engine, turbine, compressor, nozzle	19, 20, 23, 24, 26 Sep 2024		
3.		1.3 Thermodynamic processes & representation on P-V and T-S diagram, simple numerical problems	3, 5, 7, 8 Oct 2024		
4.		1.4 Second Law of Thermodynamics – Kelvin Planck & Clausius statements, heat engine, heat pump, refrigerator, Carnot cycle, efficiency, COP	9, 10, 14, 17 Oct 2024		
5.		1.5 Entropy – Clausius inequality, concept of entropy, increase of entropy, T-S and H-S diagram	21, 22, 24 Oct 2024		
6.		Assignment/tutorial classes			
7.	UNIT 2	2.1 Air Standard Cycles – Otto cycle, Diesel cycle, PV & TS diagram, derivation of efficiency, comparison and limitations	4, 5, 6 Nov 2024		

8.	Air Standard Cycles & IC Engines	2.2 Internal Combustion Engines – introduction, classification, components, two stroke and four stroke engine working and comparison	11, 12, 13, 14 Nov 2024		
9.		2.3 Indicator diagram, IP, BP, FP calculation, thermal & mechanical efficiency, pollution & emission norms	18, 21, 25, 28 Nov 2024		
10.		Assignment/tutorial classes			
11.	UNIT 3 Pure Substances	3.1 Pure substance, phase, phase change, steam as two phase system, steam formation, enthalpy plane	2, 3 Dec 2024		
12.		3.2 Representation of wet, dry, saturated & superheated steam on PV, TS & HS diagrams, dryness fraction	5, 7, 8 Dec 2024		
13.		3.3 Calculations on steam quality using steam table	11, 14 Dec 2024		
14.		3.4 Safety precautions in handling steam	16 Dec 2024		
15.		Assignment/tutorial classes			
16.	UNIT 4 Ideal Gases & Ideal Gas Processes	4.1 Avogadro law, derivation of characteristic gas equation using Boyle's & Charles law, gas constant, numerical problems	17, 20, 21 Dec 2024		
17.		4.2 Ideal Gas Processes – Isobaric, Isochoric, Isothermal, Isentropic, Polytropic, Throttling, PV & TS diagrams, work & heat calculations	22, 23, 26, 29 Dec 2024		
18.		Assignment/tutorial classes			
19.	UNIT 5 Air Compressors	5.1 Basics of compression and uses of compressed air	2 Jan 2025		
20.		5.2 Classification of compressors, reciprocating & centrifugal compressor, work done and efficiencies	4, 7 Jan 2025		
21.		5.3 Multistage compression and intercooling	8 Jan 2025		
22.		5.4 Safety precautions in handling compressed air	9 Jan 2025		
23.		Assignment/tutorial classes			

24.	UNIT 6 Heat Transfer	6.1 Modes of heat transfer and related terms (thermal conductivity, diffusivity, heat flux, resistance)			
25.		6.2 Conduction – Fourier law and temperature gradient			
26.		6.3 Heat transfer through flat plate and applications			
27.		6.4 Convection & Radiation – Newton cooling law, Stefan-Boltzmann law, emissivity etc.			
28.		6.5 Heat exchangers – types, construction, working and applications			
29.		Assignment/tutorial classes			

Total Number Of Lecture Planed :-

Total Number Of Lecture Executed :-

Signature of Subject Faculty

Date.....

H.O.D (Mechanical Engg.)

Date.....