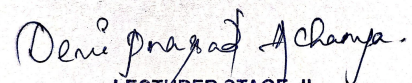


Discipline:		Semester:		Name of the Teaching Faculty:	
MECHANICAL		4th		Er. DEVI PRASAD ACHARYA	
Subject:		No.of days/per week class allotted: 03 Periods		Semester From date: 22/12/2025	
THERMAL ENGG.-II				To date: 18/04/2026	
				No of weeks: 15	
Month	Week	Availability of Classes	Class Day	Theory Topics to be covered	
DECEMBER	1	2	26.12.2025	Introduction & Brayton Cycle	Air-standard Brayton cycle; p-v and T-S diagrams.
				Gas Turbine Classification	Open and closed cycle gas turbines; comparison with IC engines.
JANUARY	2	4	02.01.2026	Layouts & Working	General lay-out of Open and Closed cycle constant pressure turbines.
				Applications	Applications and limitations of gas turbines.
			03.01.2027	Jet Propulsion Principles	Principle of jet propulsion and applications.
				Jet Engines	Working of turbojet engines and the Ram effect.
	3	2	09.01.2026	Ramjet Engines	Working principle of a Ramjet engine.
				Rocket Propulsion	Principle and working of a rocket engine.
	4	4	16.01.2026	Rocket Applications	Applications of rocket propulsion.
				Propulsion Comparison	Comparison of jet and rocket propulsions.
			17.01.2026	Steam Formation	Formation of steam under constant pressure and industrial uses.
				Basic Definitions	Saturated liquid/vapor lines, liquid/vapor/wet/superheat regions.
	5	4	30.01.2026	Critical Point & Heat	Critical point, saturation temperature, sensible and latent heat.
				Steam Quality	Wet steam, dryness fraction, wetness fraction, and superheated steam.
31.01.2026			Property Determination	Enthalpy, internal energy, entropy using steam tables and Mollier chart.	
			Thermodynamic Processes 1	Isochoric, Isobaric, and Hyperbolic processes using charts.	
FEBRUARY	6	4	06.02.2026	Thermodynamic Processes 2	Isothermal, Isentropic, and Throttling processes.
				Polytropic Processes	Simple direct problems on steam processes using tables.
			07.02.2026	Steam Calorimeters 1	Separating and throttling calorimeters.
				Steam Calorimeters 2	Combined Separating and Throttling calorimeters - problems.
	7	2	13.02.2026	Boiler Classification	Function, use, and classification of steam boilers with examples.
				Boiler Types	Sketches and working of Cochran, Babcock, and Wilcox Boilers.

	8	4	20.02.2026	Fire vs Water Tube	Comparison of water tube and fire tube boilers.
				High Pressure Boilers	Description and working of Lamont and Benson boilers.
			21.02.2026	Boiler Mountings	Pressure gauge, water level indicator, fusible plug, and safety valves.
				Boiler Accessories	Feed pump, economizer, superheater, and air preheater.
	9	2	27.02.2026	Traps & Draught	Steam traps, separators, and Draught systems (Natural, forced, induced).
				Performance & Efficiency	Actual/equivalent evaporation, boiler horse power, and efficiency problems.
MARCH	10	4	06.03.2026	Nozzle Flow	Flow of steam through nozzle and heat drop analysis.
				Exit Velocity	Velocity at exit using analytical method and Mollier chart.
			07.03.2026	Discharge Calculation	Discharge of steam through nozzles and Critical pressure ratio.
				Nozzle Design	Calculation of cross-sectional areas at throat and exit.
	11	2	13.03.2026	Maximum Discharge	Methods for maximum discharge and simple numerical problems.
				Friction Effects	Effect of friction in nozzles.
	12	2	20.03.2026	Supersaturated Flow	Super saturated flow in nozzles.
				Jet Injector	Working of steam jet injector.
APRIL	13	2	04.04.2026	Unit IV Review	Comprehensive numerical problems on steam nozzles.
				Problem Solving	Advanced numerical application of Unit IV concepts.
	14	2	10.04.2026	Turbine Classification	Classification and difference between impulse & reaction turbines.
				De-Laval Turbine	Simple De-Laval turbine working and velocity diagrams.
	15	4	17.04.2026	Turbine Work	Work done, axial/tangential thrust, and blade/diagram efficiency.
				Speed Reduction	Compounding for velocity, pressure, or both.
			18.04.2026	Reaction Turbines	Parson's Reaction turbine-velocity diagrams and working principle.
				Turbine Problems	Single stage impulse and reaction turbine numericals (blade height).
	16	2	24.04.2026	Governing	Throttle, By-pass, and Nozzle control governing.


DEVI PRASAD ACHARYA
 LECTURER STAGE - II
 Mechanical Engg. Deptt.
 Orissa School of Mining Engg.
 Keonjhar