

## GOVERNMENT POLYTECHNIC, NABARANGPUR DEPARTMENT OF AUTOMOBILE ENGINEERING

Discipline AUTOMOBILE ENGG	Semester :3 <sup>rd</sup>	Name of the Teaching Faculty: Er.LAXMAN GOLARI
Subject:THERMAL ENGINEERING-I	No. of days/per week class allotted:04	Semester From date :16.08.2024 To Date :08.11.2024  No. of Weeks: 12
Week	Class Day	Theory / Practical Topics
1ST	1ST	Thermodynamic Systems (closed, open, isolated) enthalpy, Internal energy and units of measurement).
	2 <sup>ND</sup>	Thermodynamic properties of a system (pressure, volume, temperature, entropy,
	3 <sup>RD</sup>	Thermodynamic properties of a system (pressure, volume, temperature, entropy,
And the second of the second o	4 <sup>TH</sup>	Intensive and extensive properties
2ND	1ST	Define thermodynamic processes, path, cycle , state, path function, point function
	2 <sup>ND</sup>	Define thermodynamic processes, path, cycle, state, path function, point function
	3 <sup>RD</sup>	Thermodynamic Equilibrium.
	4 <sup>TH</sup>	Quasi-static Process.
3RD	1 <sup>ST</sup>	Conceptual explanation of energy and its sources
	2 <sup>ND</sup>	Work, heat and comparison between the two
	3 <sup>RD</sup>	Mechanical Equivalent of Heat.
	4 <sup>TH</sup>	
4 <sup>TH</sup>	1ST	Work transfer, Displacement work
	2 <sup>ND</sup>	State & explain Zeroth law of thermodynamics.
	3 <sup>RD</sup>	State & explain First law of thermodynamics.
	4 <sup>TH</sup>	Limitations of First law of thermodynamics
5тн	1ST	Application of First law of Thermodynamics (steady flow energy equation and its application to turbine and compressor
6TH	\$ 5	Application of First law of Thermodynamics (steady flow energy equation and its application to turbine and compressed
	2 <sup>ND</sup>	Second law of thermodynamics (Claucius& Kelvin Plank statements).
	3 <sup>RD</sup>	Second law of thermodynamics (Claucius& Kelvin Plank statements).
	4 <sup>TH</sup>	Application of second law in heat engine, heat pump, refrigerator & determination of efficiencies & C.O.P.
	1 <sup>ST</sup>	Application of second law in heat engine, heat pump, refrigerator & determination of efficiencies & C.O.P (solve simple numerical)
	2 <sup>ND</sup>	(solve simple numerical)
	3 <sup>RD</sup>	Laws of perfect gas: Boyle's law, Charle's law, Avogadro's law, Dalton's law of partial pressure, Guy lussac law, General gas equation, characteristic gas constant, Universal gas constant.
	4 <sup>TH</sup>	Laws of perfect gas:

			Boyle's law, Charle's law, Avogadro's law, Dalton's law of partial pressure, Guy lussac law, General gas equation,
			Boyle's law, Charle's law, Avogadro's law, Dateston, partial pressure, Guy lussac law, General gas equation, characteristic gas constant, Universal gas constant.
Hall Page			partial pressure, Guy lussac law, General gas constant. characteristic gas constant, Universal gas constant. Explain specific heat of gas (Cp and Cv)
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		Maria and the same of the same	characteristic gas constant, University (CP) Explain specific heat of gas (Cp and Cv)
7 <sup>TH</sup>	1s	a State of	
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Establish kali ceng			WAR THE WAR THE
	2N	ID .	Relation between Cp&Cv
	Section 1	The second second	Enthalpy of a gas.
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		Na haranan ad	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	3 <sup>R</sup>	D	Work done during a non- flow process.  Application of first law of thermodynamics to various non flow  (Lasthermal, Isoharic, Isentropic and polytrophic process
and the second s	41	ASSESSED AND PROPERTY OF THE RESIDENCE OF PROPERTY OF THE PROP	Application of first law of thermodynamics to various ne- process (Isothermal, Isobaric, Isentropic and polytrophic process
	4		process (Isolnellia), Isobary
8 <sup>TH</sup>	18	T	Solve simple problems on above
8111	2 <sup>N</sup>	ID .	Free expansion & throttling process
	3 <sup>R</sup>	and the state of the first the first the state of the sta	Explain & classify I.C engine.
	Action is not being		nt 2 to 2 de la companya de la comp
	A Marie A. Principles and A. J. Agent.	Section States 19	as hore dead centers, stroke
	4 <sup>T</sup>	H	Terminology of I.C Engine such as bore, dead centers, stroke
	Declaration to better a minimal file.	A PART OF THE PART	volume, piston speed &RPM.  Terminology of I.C Engine such as bore, dead centers, stroke
9тн	1 <sup>S</sup>	T	Terminology of I.C Engine Such as bore, debut
	2 <sup>N</sup>	D	volume, piston speed &RPM.  Explain the working principle of 2-stroke & 4- stroke engine C.I
	2 <sup>N</sup>		[마바다 경기 :
	3R	D	& S.I engine Explain the working principle of 2-stroke & 4- stroke engine C.I8
	3**		S.I engine
	4 <sup>T</sup>	н	Carnot cycle
		LAY OF SA	
10 <sup>TH</sup>	1 <sup>S</sup>	T	Otto cycle, Diesel cycle.
		who there's	Supplemental and the supplemen
	2 <sup>N</sup>	D	Dual cycle
	TOWN THE PARTY OF	er trip Artisty	
	3 <sup>R</sup>	D	Solve simple numerical
	A che diductation	arrive II <mark>kg</mark> ezza	file the nation of the second
i orae an	<b>4</b> T	<b>H</b>	Solve simple numerical
	er garge le transport	er, with TVV view	Charles on the Parish Charles and the Charles of th
11 <sup>TH</sup>	18		Solve simple numerical
	Committee N. Salas and	rice of the text of the	
	2 <sup>N</sup>	D	Define Fuel, Types of fuel.
	garaga ay Maraya ay a sa	A set of section (1974)	Kerker Area State and the Control of
	3 <sup>RI</sup>	D	Application of different types of fuel.
	4 <sup>TI</sup>	H	Heating values of fuel.
12 <sup>TH</sup>	187		Quality of I.C engine fuels Octane number, Cetane number.
	2 <sup>NI</sup>	·清京、东京、芦苇、西牙、京	Quality of I.C engine fuels Octane number, Cetane number.
	3 <sup>RI</sup>		그러워 그는 그리고 그는
	3.5 在车辆中间,在2.46的时间。 <b>"</b> "同时		Quality of I.C engine fuels Octane number, Cetane number.
	411		Solve simple numerical

## Learning Resouces:

- 01. Thermal Engineering, byR.S.Khurmi,S.Chand
- 02. Thermal Engineeringby A.R.Basu, DhanpatRai
- 03. Thermal Engineering, by A.S.Sarao, Satya Prakash
- 04. Engineering Thermodynamics, by P.K.Nag, TMH
- 05. Thermal Engineeringby Mahesh M Rathore, TMH

Signature Of Faculty Concerned

Laxnan Golaw

Academic Coordinator

Pay 29 HOD, TO 2108/29

Principal, Gp Nabarangpur