Lesson Plan

Discipline: Mechanical Engg.	Semester: 3rd	Faculty Name: Litu Behera
Subject: Thermal Engineering-I	No. of Days/per week class allotted:04	Semester from 15.09.2022 to 22.12.2022 No. of weeks:15
week	Class day	Theory topics
1st	1st	Thermodynamic concept & Terminology Thermodynamic Systems (closed, open, isolated),
	2nd	Thermodynamic properties of a system (pressure, volume, temperature and units of measurement.)
	3rd	Problems on absolute pressure and temperature relationship.
	4th	Thermodynamic properties of a system (entropy, Enthalpy, Internal energy and units of measurement).
2nd	1st	Intensive and extensive properties, Define thermodynamic processes, path.
	2nd	Define thermodynamic cycle, state, path function, point function.
	3rd	Thermodynamic Equilibrium, Quasi-static Process.
	4th	Conceptual explanation of energy and its sources.
3rd	1st	Work, heat and comparison between the two.
	2nd	Mechanical Equivalent of Heat.
	3rd	Work transfer, Displacement work
	4th	Problem on Displacement work.
4th	1st	Laws of Thermodynamics State & explain Zeroth law of thermodynamics, State & explain First law of thermodynamics.
	2nd	Problems on First law of thermodynamics.
	3rd	Problems on First law of thermodynamics, Limitations of First law of thermodynamics.
	4th	First law of Thermodynamics (steady flow energy equation)
5th	1st	application of steady flow energy equation to turbine
	2nd	Problems on SFEE to turbine.
	3rd	application of steady flow energy equation to compressor
	4th	Problems on SFEE to compressor.
6th	1st	Second law of thermodynamics (Claucius & Kelvin Plank statements).

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	2nd	Application of second law in heat engine & determination of efficiencies
	3rd	Problems on heat engine
	4th	Application of second law in heat pump, refrigerator & determination of C.O.P
7th	1st	Problems on heat pump and refrigerator
	2nd	Properties Processes of perfect gas Laws of perfect gas: Boyle's law, Charle's law, Avogadro's law, Dalton's law of partial pressure, Guy lussac law.
	3rd	General gas equation, characteristic gas constant, Universal gas constant.
	4th	Explain specific heat of gas (Cp and Cv) and Relation between Cp & Cv.
8th	1st	Enthalpy of a gas and problem on it.
	2nd	Work done during a non- flow process.
	3rd	Problems on non flow work done
	4th	Application of first law of thermodynamics to various non flow process (Isothermal, Isobaric, Isentropic and polytrophic process)
9th	1st	Problems on various non flow process
	2nd	Free expansion & throttling process.
	3rd	Internal combustion engine Explain & classify I.C engine.
	4th	Terminology of I.C Engine such as bore, dead centers, stroke volume.
10th	1st	Terminology of I.C Engine such piston speed &RPM.
	2nd	Explain the working principle of 2-stroke engine (C.I & S.I engine)
	3rd	Explain the working principle of 4-stroke engine (C.I & S.I engine)
	4th	Differentiate between 2-stroke & 4- stroke engine.
11th	1st	Differentiate between C.I & S.I engine.
	2nd	Gas Power Cycle Carnot cycle
	3rd	Problems on carnot cycle.
	4th	Otto cycle.
12th	1st	Problems on Otto cycle
	2nd	Diesel cycle.
	3rd	Problems on Diesel cycle
	4th	Dual cycle.
13th	1st	Problems on Dual cycle

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	2nd	Comparison among otto, diesel and dual cycle
	3rd	Fuels and Combustion Define Fuel and Types of fuel.
	4th	Application of different types of fuel.
14th	1st	Heating values of fuel.
	2nd	Problems on Heating values of fuel.
	3rd	Quality of I.C engine fuels
	4th	Octane number and Cetane number
15th	1st	Revision of module-1,2 & 3 with Previous year question
	2nd	Revision of module-4,5 & 6 with Previous year question
	3rd	Previous year question discussion
	4th	Question bank discussion

Subhasna.
14.9.2022

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