BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF AUTOMOBILE ENGINEERING

LESSON PLAN

SUBJECT: **THERMAL EGIEERING (TH-4)**

FACULTY: **KULADEEP MOHAPATRA**

ACCADEMIC SESSION: **2022-23**

SEMESTER: **3RD**

14/9/22

Sd/-
H.O.D.(AutomobileEngg.)

Sr. Lecturer
Automobile Engg. Dept.
BOSE. CUTTACK

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Discipline:-**Automobile Engineering**	Semester :-**3rd**	Name of the teaching faculty :-**KULADEEP MOHAPATRA**
Subject Name :- **THERMAL ENGINEERING (TH-4)**	No. Of Days/Week Class Allotted :- **04 Periods/Week (Tuesday ,Wednesday Thursday, Friday – 1 Period Each)**	Semester from Date -**15/09/2022** To Date -**22/12/2022** **No.of Weeks: 14**
WEEK	**CLASS DAY**	**THEORY TOPICS**
1st	15.09.2022	Introduction of thermal engineering. **1. Thermodynamic concept &Terminology**
	16.09.2022	1.1 Thermodynamic Systems (closed, open, isolated)
2nd	20.09.2022	1.2 Thermodynamic properties of a system (pressure, volume, temperature, entropy, enthalpy, Internal energy and units of measurement).
	21.09.2022	1.3 Intensive and extensive properties
	22.09.2022	1.4 Define thermodynamic processes, path, cycle, state, path function, point function.
	23.09.2022	1.5 Thermodynamic Equilibrium. 1.6 Quasi-static Process.
3rd	27.09.2022	1.7 Conceptual explanation of energy and its sources. 1.8 Work, heat and comparison between the two.
	28.09.2022	1.9 Mechanical Equivalent of Heat.
	29.09.2022	1.10 Mechanical Equivalent of Heat.
	30.09.2022	**CLASS TEST -1**
4th	11.10.2022	**2. Laws of Thermodynamics** 2.1 State &explain Zeroth law of thermodynamics.
	12.10.2022	2.2 State & explain First law of thermodynamics.
	13.10.2022	2.3 Limitations of First law of thermodynamics.
	14.10.2022	2.4 Application of First law of Thermodynamics (steady flow energy

		equation and its application to turbine and compressor)
5th	18.10.2022	2.5 Second law of thermodynamics (Claucius & Kelvin Plank statements).
	19.10.2022	2.6 Application of second law in heat engine, heat pump & determination of efficiencies.
	20.10.2022	2.6 Application of second law in refrigerator & determination of C.O.P (solve simple numerical)
	21.10.2022	**CLASS TEST -2**
6th	25.10.2022	**3. Properties Processes of perfect gas** 3.1 Laws of perfect gas:Boyle's law, Charles's law, Avogadro's law
	26.10.2022	3.1 Dalton's law of partial pressure, Guy lussac law, General gas equation
	27.10.2022	3.1 characteristic gas constant, Universal gas constant
	28.10.2022	3.2 Explain specific heat of gas (Cp and Cv)
7th	01.11.2022	3.3 Relation between Cp & Cv. 3.4 Enthalpy of a gas
	02.11.2022	3.5 Work done during a non- flow process
	03.11.2022	3.6 Application of first law of thermodynamics to various non-flow process (Isothermal, Isobaric, Isentropic and polytrophic process)
	04.11.2022	3.6 Solve simple problems on above.
8th	09.11.2022	3.7 free expansion & throttling process.
	10.11.2022	**INTERNAL ASSESSMENT**
	11.11.2022	**4.Internal combustion engine** 4.1 Explain & classify I.C engine.
9th	15.11.2022	4.2 Terminology of I.C Engine such as bore, dead centres, stroke volume, piston speed & RPM.
	16.11.2022	4.3 Explain the working principle of 2-stroke &4-stroke engine C.I & S.I engine.
	17.11.2022	4.4 Differentiate between 2-stroke & 4- stroke engine C.I & S.I engine.
	18.11.2022	**CLASS TEST -3**
10th	22.11.2022	**5. Gas Power Cycle** 5.1 Carnot cycle
	23.11.2022	5.2 Otto cycle.

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	24.11.2022	5.3 Diesel cycle.
	25.11.2022	5.4 Dual cycle.
11th	29.11.2022	5.5 Solve simple numerical.
	30.11.2022	6. Fuels and Combustion
	01.12.2022	**CLASS TEST – 4**
	02.12.2022	**6. Fuels and Combustion** 6.1 Define Fuel.
12th	06.12.2022	6.2 Types of fuel.
	07.12.2022	6.2 Types of fuel.
	08.12.2022	6.3 Application of different types of fuel
	09.12.2022	6.3 Application of different types of fuel
13th	13.12.2022	6.4 Heating values of fuel.
	14.12.2022	6.5 Quality of I.C engine fuels Octane number, Cetane number.
	15.12.2022	**CLASS TEST -5**
[illegible]	16.12.2022	**REVISION**
14th	20.12.2022	**REVISION**
	21.12.2022	**PREVIOUS YEAR QUESTIONS DISCUSSION**

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