LESSON PLAN

SUBJECT: Th-4(THERMAL ENGINEERING I)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	Thermodynamic concept & Terminology	12	12
2	Laws of Thermodynamics	12	14
3	Properties Processes of perfect gas	10	12
4	Internal combustion engine	8	10
5	Air Standard Cycle	10	12
6	Fuels and Combustion	8	6
	Total Period	60	66

Discipline: AUTOMOBILE ENGINEERING	Semester: 3rd	Name of the Teaching Faculty: Er.Pradyumna Kumar Khilar	
		SESSION:2023-24	EXAMINATION:2023(W)
Week	**Class Day**	**Theory Topics**	
1st	1st	1.1 Thermodynamic Systems (closed, open, isolated)	
	2nd	1.2 Thermodynamic properties of a system (pressure, volume, temperature, entropy	
	3rd	1.2 Thermodynamic properties of a system (pressure, volume, temperature, entropy	
	4th	1.3 Intensive and extensive properties	
2nd	1st	1.4 Define thermodynamic processes, path, cycle , state, path function, point function.	
	2nd	1.4 Define thermodynamic processes, path, cycle , state, path function, point function.	
	3rd	1.5 Thermodynamic Equilibrium.	
	4th	1.6 Quasi-static Process	
3rd	1st	1.7 Conceptual explanation of energy and its sources	
	2nd	1.8 Work , heat and comparison between the two.	
	3rd	1.9 Mechanical Equivalent of Heat	
	4th	1.10Work transfer, Displacement work	
4th	1st	2.1 State & explain Zeroth law of thermodynamics.	
	2nd	2.1 State & explain Zeroth law of thermodynamics.	
	3rd	2.2 State & explain First law of thermodynamics.	
	4th	2.3 Limitations of First law of thermodynamics	
5th	1st	2.4Application of First law of Thermodynamics (steady flow energy equation and its application to turbine and compressor)	
	2nd	2.4Application of First law of Thermodynamics (steady flow energy equation and its application to turbine and compressor)	
	3rd	2.5 Second law of thermodynamics (Claucius & Kelvin Plank statements)	

Week	Class Day	Theory Topics
5th	4th	2.5 Second law of thermodynamics (Claucius & Kelvin Plank statements)
6th	1st	2.5 Second law of thermodynamics (Claucius & Kelvin Plank statements)
	2nd	2.6 Application of second law in heat engine, heat pump, refrigerator & determination of efficiencies & C.O.P (solve simple numerical)
	3rd	2.6 Application of second law in heat engine, heat pump, refrigerator & determination of efficiencies & C.O.P (solve simple numerical)
	4th	2.6 Application of second law in heat engine, heat pump, refrigerator & determination of efficiencies & C.O.P (solve simple numerical)
7th	1st	2.6 Application of second law in heat engine, heat pump, refrigerator & determination of efficiencies & C.O.P (solve simple numerical)
	2nd	2.6 Application of second law in heat engine, heat pump, refrigerator & determination of efficiencies & C.O.P (solve simple numerical)
	3rd	3.1 Laws of perfect gas: Boyle's law, Charle's law, Avogadro's law, Dalton's law of partial
	4th	3.2 Explain specific heat of gas (Cp and Cv)
8th	1st	3.2 Explain specific heat of gas (Cp and Cv)
	2nd	3.3 Relation between Cp & Cv.
	3rd	3.4 Enthalpy of a gas.
	4th	3.5 Work done during a non- flow process.
9th	1st	3.5 Work done during a non- flow process.
	2nd	3.6 Application of first law of thermodynamics to various non flow process(Isothermal,Isobaric, Isentropic and polytrophic process)

Week	Class Day	Theory Topics
9th	3rd	3.6 Application of first law of thermodynamics to various non flow process(Isothermal,Isobaric, Isentropic and polytrophic process)
	4th	3.6 Solve simple problems on above.
10th	1st	3.6 Solve simple problems on above.
	2nd	3.7 Free expansion & throttling process.
	3rd	4.Internal combustion engine
	4th	4.1 Explain & classify I.C engine.
11th	1st	4.2 Terminology of I.C Engine such as bore, dead centers, stroke volume, piston speed &RPM.
	2nd	4.2 Terminology of I.C Engine such as bore, dead centers, stroke volume, piston speed &RPM.
	3rd	4.3 Explain the working principle of 2-stroke & 4- stroke engine C.I & S.I engine.
	4th	4.3 Explain the working principle of 2-stroke & 4- stroke engine C.I & S.I engine.
12th	1st	4.3 Explain the working principle of 2-stroke & 4- stroke engine C.I & S.I engine.
	2nd	4.4 Differentiate between 2-stroke & 4- stroke engine C.I & S.I engine.
	3rd	**INTERNAL ASSESMENT**
	4th	**INTERNAL ASSESMENT**
13th	1st	4.4 Differentiate between 2-stroke & 4- stroke engine C.I & S.I engine.
	2nd	4.4 Differentiate between 2-stroke & 4- stroke engine C.I & S.I engine.
	3rd	5.1 Carnot cycle
	4th	5.1 Carnot cycle
14th	1st	5.1 Carnot cycle
	2nd	5.2 Otto cycle.

Week	Class Day	Theory Topics
14th	3rd	5.2 Otto cycle.
	4th	5.2 Otto cycle.
15th	1st	5.3 Diesel cycle.
	2nd	5.3 Diesel cycle.
	3rd	5.3 Diesel cycle.
	4th	5.4 Dual cycle.
16th	1st	5.5 Solve simple numerical.
	2nd	5.5 Solve simple numerical.
	3rd	6.1 Define Fuel.
	4th	6.2 Types of fuel.
17th	1st	6.3 Application of different types of fuel.
	2nd	6.4 Heating values of fuel.
	3rd	6.5 Quality of I.C engine fuels Octane number, Cetane number.
	4th	6.5 Quality of I.C engine fuels Octane number, Cetane number.