NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)

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	14	12
3	Properties Processes of perfect gas	10	10
4	Internal combustion engine	7	8
5	Air Standard Cycle	12	10
6	Fuels and Combustion	6	8
	Total Period:	60	60

Discipline: AUTO / MECH ENGINEERING	**Semester:** 3rd	**Name of the Teaching Faculty: Er. PRADYUMNA KUMAR KHILAR**
Week	**Class Day**	**Theory / Practical 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
	2nd	2.4Application of First law of Thermodynamics (steady flow energy equation and its
	3rd	2.4 Second law of thermodynamics (Claucius & Kelvin Plank statements).
	4th	2.4 Second law of thermodynamics (Claucius & Kelvin Plank statements).
6th	1st	2.4 Second law of thermodynamics (Claucius & Kelvin Plank statements).
	2nd	2.5 Application of second law in heat engine, heat pump, refrigerator & determination of
	3rd	2.5 Application of second law in heat engine, heat pump, refrigerator & determination of
	4th	2.5 Application of second law in heat engine, heat pump, refrigerator & determination of
7th	1st	2.5 Application of second law in heat engine, heat pump, refrigerator & determination of
	2nd	3.1 Laws of perfect gas: Boyle's law, Charle's law, Avogadro's law, Dalton's law of partial
	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	3.3 Relation between Cp & 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	3.6 Application of first law of thermodynamics to various non flow process(Isothermal,Isobaric, Isentropic and polytrophic process)
	2nd	3.6 Application of first law of thermodynamics to various non flow process(Isothermal,Isobaric, Isentropic and polytrophic process)
	3rd	3.6 Solve simple problems on above.
	4th	3.7 Free expansion & throttling process.

10th	1st	Internal combustion engine
	2nd	INTERNAL ASSESMENT
	3rd	INTERNAL ASSESMENT
	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	4.4 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
13th	1st	5.2 Otto cycle.
	2nd	5.3 Diesel cycle.
	3rd	5.3 Diesel cycle.
	4th	5.4 Dual cycle.
14th	1st	5.4 Dual cycle.
	2nd	5.5 Solve simple numerical.
	3rd	5.5 Solve simple numerical.
	4th	6.1 Define Fuel.
15th	1st	6.2 Types of fuel.
	2nd	6.3 Application of different types of fuel.
	3rd	6.4 Heating values of fuel.
	4th	6.5 Quality of I.C engine fuels Octane number, Cetane number.