SAMANTA CHANDRASEKHAR INSTITUTE OF TECHNOLOGY & MANAGEMENT

SEMILIGUDA-764 036, KORAPUT

DEPT. OF... MECHANICAL ENGINEERING

LESSON PLAN AND PROGRESS REGISTER

(To be maintained by all members of the teaching staff)

SESSION... 2023-24 (odd) .....

NAME Jitendra Kumar Muduli

DESIGNATION Lecturer

DEPT. Mechanical (Diploma 3rd & 5th sem)

SIGNATURE

This Lesson Plan and Progress Register is to be submitted to the Director for verification and counter signature twice in every semester. The H.O.D. must verify and sign this Register before submission.

COURSES ALLOTED

FOR DIFFERENT BRANCHES & SEMESTER (Degree/Diploma/+2 Science)

Semester	Course No.	Course Title
3rd		THERMAL ENGINEERING-I
5th		REFRIGERATION & AIR CONDITIONING

LESSON PLAN

Degree/Diploma/+2 Science
(Theory/Pract/Lab/Workshop)

Semester 3rd Branch Mechanical

Month & Date	Course No. & Title	Brief note of the topics to be covered	No. of Classes Required
14/8/23 to	Thermodyna-mic concept & Terminology	1. Thermodynamics Systems (closed, open, isolated) 2. Thermodynamic properties of a system	2
1/9/23		(pressure, volume, temperature, entropy, enthalpy, Internal energy	
		and units of measurements) 3. Intensive & extensive properties.	1
		4. Define thermodynamic process, path, cycle, state, path function, point	2
		function, 5. Thermodynamic equilibrium.	3
		6. Quasi-static Process 7. conceptual explanation of energy & its sources.	
		8. Work, heat & comparison between the two 9. Mechanical Equivalent of Heat 10. Work transfer, Displacement work.	4
7/9/23 to	Laws of Thermodyna-mics	1. State & explain Zeroth law of thermodynamics. 2. State & explain First law of thermodynamics	3
25/9/23		3. Limitations of First law of thermodynamics 4. Application of First law of TD (steady	2
		flow energy equation & its application to turbine & compressor)	
		5. Second law of TD (Clausius & Kelvin Plank statements)	3
		6. Application of second law in heat engine, heat pump, refrigerator &	2
		determination of efficiency & C.O.P (Numericals)	2

LESSON PLAN

Degree/Diploma/+2 Science
(Theory/Pract/Lab/Workshop)

Semester 3rd Branch Mechanical

Month & Date	Course No. & Title	Brief note of the topics to be covered	No. of Classes Required
26/9/23 to	Properties Processes of	1. Laws of perfect gas:- Boyle's law, charle's law, Avogadro's law, Dalton's law of partial pressure, Guy lussac	3
12/10/23	Perfect gas.	law, General gas equation, characteristic gas constant, Universal gas constant.	
		2. Explain specific heat of gas (C_p & C_v) 3. Relation between C_p & C_v	1
		4. Enthalpy of a gas. 5. Work done during a non-flow process.	2
		6. Application of 1st law of TD to various non flow process (Isothermal, Isobaric, Isentropic & Polytrophic process)	2
		7. Problems 8. Free expansion & throttling proxes.	2
14/10/23 to	Internal combustion engine.	1. Explain & classify I.C engine. 2. Terminology of IC engine & such as	3
31/10/23		bore, dead centers, stroke volume, piston speed & RPM.	
		3. Explain the working principle of 2-stroke & 4-stroke engine CI & SI.	3
		4. Differentiate between 2stroke & 4-stroke engine CI & SI engine	2
1/11/23 to	Gas Power cycle.	1. Carnot cycle 2. otto cycle. 3. Diesel cycle	4
15/11/23		4. Dual cycle 5. Solve simple numericals.	2 4

LESSON PLAN

Degree/Diploma/+2 Science ✓ (Diploma)
(Theory/Pract/Lab/Workshop)

Semester: 3rd   Branch: Mechanical

Month & Date	Course No. & Title	Brief note of the topics to be covered	No. of Classes Required
16/11/23 to	Fuels & Combustion	1. Define fuel 2. Types of fuel	3
23/11/23		3. Application of different types of fuel 4. Heating values of fuel.	
		5. Quality of I.C. engine fuels octane number, Cetane number	4

LESSON PLAN

Degree/Diploma/+2 Science
(Theory/Pract/Lab/Workshop)

Semester 5th Branch Mechanical

Month & Date	Course No. & Title	Brief note of the topics to be covered	No. of Classes Required
14/8/23	Air Refrigeration	1. Definition of refrigeration and unit of refrigeration.	2
do	cycle.	2. Definition of COP, Refrigerating effect (R.E)	
19/8/23		3. Principle of working of open and closed air system of refrigeration.	3
		4. Calculation of COP of Bell-Coleman cycle and numerical on it.	
21/8/23	Simple vapour compression	1. Schematic diagram of simple vapours compression refrigeration system. 2. Types.	1
do	Refrigeration system.	→ cycle with dry saturated vapors after compression.	
26/8/23		→ cycle with wet vapors after compression. → cycle with superheated vapors after	1
		compression. → cycle with superheated vapors before compression.	
		→ cycle with sub cooling of refrigerant → Representation of above cycle on	
		temperature entropy and pressure enthalpy diagram.	3
		→ Numericals on above (determination of COP, mass flow)	
28/8/23	Vapour Absorption	1. Simple vapor absorption refrigeration system.	2
do 7/9/23	Refrigeration system.	2. Practical vapor absorption refrigeration system.	

LESSON PLAN

Degree/Diploma/+2 Science
(Theory/Pract/Lab/Workshop)

Semester 5th Branch Mechanical

Month & Date	Course No. & Title	Brief note of the topics to be covered	No. of Classes Required
		3. COP of an ideal vapour absorption refrigeration system.	3
		4. Numerical on COP.	
9/9/23 to 13/9/23	Refrigerant Compressors	→ Refrigeration Equipments. → Principle of working and constructional details of reciprocating and rotary compressors.	2
		→ Centrifugal compressor only theory → Important terms.	2
		→ Hermetically and semi hermetically sealed compresson.	
14/9/23 to 25/9/23	condensers	→ Principle of working and constructional details of air cooled & water cooled condenser. → Heat rejection ratio → Cooling tower and spray pond.	3
26/9/23 to 28/9/23	Evaporators	→ Principle of working and constructional details of an evaporator. → Types of evaporator. → Bare tube coil evaporator, finned evaporator, shell and tube evaporator	1 2

LESSON PLAN

Degree/Diploma/+2 Scien
(Theory/Pract/Lab/Worksho

Semester 5th Branch Mechanical

Month & Date	Course No. & Title	Brief note of the topics to be covered	No. of Classes Required
		REFRIGERANT FLOW CONTROLS, REFRIGERANTS & APPLICATIONS OF REFRIGERANTS :-	
3/10/23	Expansion valves	→ Capillary tube → Automatic expansion valve → Thermostatic expansion valve	1
to	Refrigeran-ts	1. Classification of refrigerants. 2. Desirable properties of an ideal refrigerant.	2
16/10/23		3. Designation of refrigerants. 4. Thermodynamic properties of refrigerant.	
		5. Chemical properties of refrigerants. 6. Commonly used refrigerants,	3
		R-11, R-12, R-22, R-134a, R-717 7. Substitute for CFC	
17/10/23 to	Applications of Refrigeration	1. Cold storage 2. dairy refrigeration.	2
18/10/23		3. ice plant 4. Water cooler 5. Frost free refrigeretor.	
19/10/23	Psychometr-ics &	1. Psychometric terms 2. Adiabatic saturation of air by evaporation of water.	1
to	comfort air conditioning	3. Psychometric chart and uses. 4. Psychometnic processes.	2
9/11/23	systems:	→ Sensible heating & Cooling → Cooling & Dehumidification.	
		→ Heating & Humidification. → Adiabatic cooling with humidification.	3
		→ Total heating of a cooling process → SHF, BPF.	

LESSON PLAN

Degree/Diploma/+2 Science
(Theory/Pract/Lab/Workshop)

Semester 5th Branch Mechanical

Month & Date	Course No. & Title	Brief note of the topics to be covered	No. of Classes Required
		→ Adiabatic mixing → Problems on above	
		5. Effective temperature and comfort chart.	4
11/11/23	Air conditioning System.	1. Factors affecting comfort air conditioning.	
		2. Equipment used in an air-conditioning.	2
to 20/11/23		3. Classification of air-conditioning system.	2
		4. Winter air conditioning system. 5. Summer air-conditioning system	
		6. Numerical on above	2

LESSON PLAN

Degree/Diploma/+2 Science
(Theory/Pract/Lab/Workshop)

Semester 5th Branch Mechanical

Month & Date	Course No. & Title	Brief note of the topics to be covered	No. of Classes Required
18/8/23	Practicals.	1. study the construction features of Domestic Refrigeration.	1
do		2. study the construction features of water cooler.	1
22/11/23		3. study the construction features of window air conditioner.	1
		4. study the construction features of split air conditioner.	1
		5. Determine the capacity and cop of vapour compression refrigeration testing	1
		6. Determine the capacity and cop of water cooler.	
		7. Determine the capacity and cop of window air conditioner.	
		8. Determine the capacity and cop of split air conditioner.	
		9. Determine the capacity and cop of vapour absorption Refrigeration testing	
		10. Complete charging of domestic refrigerator and its leak test.	