Lesson Plan

Name of the Faculty : Sh. Sunil Chaudhry

Discipline : Mechanical Engineering

Semester : 5th

Subject : Refrigeration and Air Conditioning (RAC)

Lesson Plan duration : 17 weeks (01.10.2021 to 28.01.2022)

Work load per week : Lecture – 03, Practical – 02

Week	Theory	
	Lecture Day	Topic (Including assessment/test)
1st	1st	Subject introduction and overview
	2nd	**1. Fundamentals of Refrigeration:** Introduction to refrigeration, and air conditioning
	3rd	Refrigerating effect, unit of refrigeration, COP, Difference between COP and efficiency,
2nd	4th	Methods of refrigeration, Natural system and artificial system.
	5th	**2. Vapour Compression System:** Introduction, principle, Function of Vapour compression system
	6th	Parts and necessity of vapour compression system
3rd	7th	T- ϕ and p– H charts,
	8th	dry, wet and superheated compression
	9th	Effect of sub cooling, super heating,
4th	10th	Actual vapour compression system, Introduction to air refrigeration system,
	11th	Advantages and Disadvantage of air refrigeration over vapour compression system.
	12th	**3. Refrigerants:** Functions, classification of refrigerants
5th	13th	Properties of R - 717, R – 22, R–134a
	14th	Properties of CO_2, R – 12, R – 502,
	15th	Properties of ideal refrigerant, selection of refrigerant

6th	16th	**4. Vapour Absorption System:** Introduction, principle and working of simple absorption system
	17th	Introduction, principle and working of domestic electrolux refrigeration systems
	18th	Solar power refrigeration system,
7th	19th	**1st sessional test (Tentative)**
	20th	**Assessment**
	21st	Advantages and Disadvantages of solar power refrigeration system over vapour compression system.
8th	22nd	**5. Refrigeration Equipment:** Compressor Function, various types of compressors
	23rd	Condenser – Function, various types of condensers
	24th	Evaporator – Function, various types of evaporators
9th	25th	Expansion Valve – Function, Various types of expansion valve- capillary tube,
	26th	thermostatic expansion valve, Low side and high side float valves,
	27th	application of various expansion valves, Safety Devices-Thermostat,
10th	28th	Overload protector, LP, HP cut out switch.
	29th	**6. Psychrometry :** Definition, importance, specific humidity, Relative humidity, degree of saturation,
	30th	DBT, WBT, DPT, Sensible heat, latent heat, Total enthalpy of air.
11th	31st	**2nd sessional test (Tentative)**
	32nd	**Assessment**
	33rd	**7. Applied Psychrometry and Heat Load Estimation:** Psychrometric chart,
12th	34th	various lines,
	35th	Psychrometric process, by pass factor, room sensible heat factor,
	36th	Effective room sensible heat factor, grand sensible heat factor, ADP, room DPT.
13th	37th	Heating and humidification,

	38th	cooling and dehumidification,
	39th	Window air-conditioning, split type air-conditioning,
14th	40th	Car air-conditioning, central air-conditioning.
	41st	**8. Latest development in refrigeration and air conditioning:** Inverter technology, auto-defrosting
	42nd	Blast cooling, star rating.
15th	43rd	**3rd sessional test (Tentative)**
	44th	**Assessment**
	45th	Revision
16th	46th	Revision
	47th	Revision
	48th	Revision
17th	49th	Revision
	50th	Revision
	51st	Revision