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 (15.09.02022 to 16.01.2023)

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

Week	Theory		EXECUTION	
	Lecture Day	Topic (Including assessment/test)	Date	Sign.
1st	1st	Introduction about the subject and brief overview.		
	2nd	**1. Fundamentals of Refrigeration** Introduction to refrigeration, and air conditioning		
	3rd	Refrigerating effect, unit of refrigeration,		
2nd	4th	COP, Difference between COP and efficiency,		
	5th	Methods of refrigeration, Natural system and artificial system.		
	6th	**2. Vapour Compression System** Introduction, principle, Function of Vapour compression system		
3rd	7th	Parts and necessity of vapour compression system		
	8th	T- ϕ and p– H charts,		
	9th	dry, wet and superheated compression		
4th	10th	Effect of sub cooling, super heating,		
	11th	Actual vapour compression system,		
	12th	Introduction to air refrigeration system,		
5th	13th	Advantages and Disadvantage of air refrigeration over vapour compression system		

	14th	**3. Refrigerants** Functions, classification of refrigerants		
	15th	Properties of R - 717, R – 22,		
6th	16th	Properties of R–134a, CO_2, R – 12, R – 502,		
	17th	Properties of R – 12, R – 502,		
	18th	Properties of ideal refrigerant, selection of refrigerant		
7th	19th	**1st sessional test (Tentative)**		
	20th	**Assessment**		
	21st	**4. Vapour Absorption System** Introduction, principle and working of simple absorption system		
8th	22nd	Introduction, principle and working of domestic electrolux refrigeration systems		
	23rd	Solar power refrigeration system, Advantages and Disadvantages of solar power refrigeration system over vapour compression system.		
	24th	**5. Refrigeration Equipment** 5.1 Compressor Function, various types of compressors		
9th	25th	5.2 Condenser – Function, various types of condensers		
	26th	5.3 Evaporator – Function, various types of evaporators		
	27th	5.4 Expansion Valve – Function, Various types of expansion valve- capillary tube,		
10th	28th	5.4 thermostatic expansion valve, Low side and high side float valves, application of various expansion valves,		
	29th	5.5 Safety Devices-Thermostat,		
	30th	5.5 Overload protector, LP, HP cut out switch.		
11th	31st	**6. Psychrometry** Definition, importance, specific humidity, Relative humidity, degree of saturation,		
	32nd	DBT, WBT, DPT,		
	33rd	Sensible heat, latent heat, Total enthalpy of air.		

12th	34th	**2nd sessional test (Tentative)**		
	35th	**Assessment**		
	36th	**7. Applied Psychrometry and Heat Load Estimation** Psychrometric chart, various lines,		
13th	37th	Psychrometric process, by pass factor, room sensible heat factor,		
	38th	Effective room sensible heat factor, grand sensible heat factor, ADP, room DPT.		
	39th	Heating and humidification, cooling and dehumidification,		
14th	40th	Window air-conditioning,		
	41st	split type air-conditioning,		
	42nd	Car air-conditioning,		
15th	43rd	central air-conditioning.		
	44th	**8. Latest development in refrigeration and air conditioning** Inverter technology, auto-defrosting		
	45th	Blast cooling, star rating.		
16th	46th	**3rd sessional test (Tentative)**		
	47th	**Assessment**		
	48th	Revision		
17th	49th	Revision		
	50th	Revision		
	51st	Revision		

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Week			EXECUTION		
	Practical Day	Topic	G1	G2	Sign.
1st	1st	Introduction about the lab and brief discussion over the practical work to be conducted.			
2nd	2nd	1. Identify various tools of refrigeration kit.			
3rd	3rd	2. Practice in cutting, bending, flaring of tubes.			
4th	4th	2. Practice in cutting, bending, flaring of tubes.			
5th	5th	2. Practice in swaging and brazing of tubes.			
6th	6th	3. Study of thermostatic switch, LP/HP cut out overload protector filters, strainers and filter driers.			
7th	7th	Checking of Practical file/ **1st sessional test (Tentative)**			
8th	8th	4. Identify various parts of a refrigerator and window air conditioner.			
9th	9th	5. To find COP of Refrigeration system			

10th	10th	6. To measure air flow using anemometer.			
11th	11th	7. Charging of a refrigerator/ air conditioner.			
12th	12th	Checking of Practical file/ **2nd sessional test (Tentative)**			
13th	13th	7. Charging of a refrigerator/ air conditioner.			
14th	14th	8. To detect faults in a refrigerator/ air conditioner			
15th	15th	8. To detect faults in a refrigerator/ air conditioner			
16th	16th	Checking of Practical file/ **3rd sessional test (Tentative)**			
17th	17th	Checking of Practical file/ Evaluation.			