

Lesson Plan

Name of the Faculty : Sh. Sunil Chaudhry

Discipline : Mechanical Engineering

Semester : 5th

Subject : Refrigeration and Air Conditioning (RAC)

Lesson Plan duration : 15 weeks (01.09.2023 to 15.12.2023)

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

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

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

	38 th	Blast cooling, star rating.		
	39 th	Revision		
14 th	40 th	3rd sessional test (Tentative)		
	41 st	Assessment		
	42 nd	Revision		
15 th	43 rd	Revision		
	44 th	Revision		
	45 th	Revision		

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Week	EXECUTION				
	Practical Day	Topic	G1	G2	Sign.
1 st	1 st	Introduction about the lab and brief discussion over the practical work to be conducted.			
2 nd	2 nd	1. Identify various tools of refrigeration kit.			
3 rd	3 rd	2. Practice in cutting, bending, flaring of tubes.			
4 th	4 th	2. Practice in swaging and brazing of tubes.			
5 th	5 th	3. Study of thermostatic switch, LP/HP cut out overload protector filters, strainers and filter driers.			
6 th	6 th	Checking of Practical file/ 1st sessional test (Tentative)			
7 th	7 th	4. Identify various parts of a refrigerator and window air conditioner.			
8 th	8 th	5. To find COP of Refrigeration system			
9 th	9 th	6. To measure air flow using anemometer.			
10 th	10 th	Checking of Practical file/ 2nd sessional test (Tentative)			

11 th	11 th	7. Charging of a refrigerator/ air conditioner.			
12 th	12 th	8. To detect faults in a refrigerator/ air conditioner			
13 th	13 th	Checking of Practical file			
14 th	14 th	3rd sessional test (Tentative)			
15 th	15 th	Checking of Practical file			