

## Lesson Plan

**Name of the faculty:** Sunil Kumar  
**Discipline :** Mechanical Engineering  
**Semester :** 5<sup>th</sup>  
**Subject :** Refrigeration and Air Conditioning  
**Lesson Plan Duratio :** 15 weeks (July-18 to Nov-18)  
**Work Load :** (L/P) (4 Periods/ 2 periods) /Week

		Theory	Practical
Week	Lecture Day	Topics	Topics
1 <sup>st</sup>	1 <sup>st</sup>	<b>Unit 1 Fundamentals of Refrigeration</b> Introduction to refrigeration, and air conditioning	1 <sup>st</sup> Identify various tools of refrigeration kit and practice in cutting, bending, flaring, swaging and brazing of tubes (Cont.).
	2 <sup>nd</sup>	Meaning of refrigerating effect, units of refrigeration, COP	
	3 <sup>rd</sup>	Methods of refrigeration (Cont.)	
	4 <sup>th</sup>	Methods of refrigeration (Cont.)	
2 <sup>nd</sup>	5 <sup>th</sup>	Methods of refrigeration	1 <sup>st</sup> Identify various tools of refrigeration kit and practice in cutting, bending, flaring, swaging and brazing of tubes.
	6 <sup>th</sup>	Introduction to air refrigerator working on reversed carnot cycle	
	7 <sup>th</sup>	<b>Unit 2 Vapour Compression System</b> Introduction	
	8 <sup>th</sup>	Principle, function, parts and necessity of vapour compression system	
3 <sup>rd</sup>	9 <sup>th</sup>	T- $\phi$ and p- H charts	2 <sup>nd</sup> Study of thermostatic switch, LP/HP cut out overload protector filters, strainers and filter driers (Cont.).
	10 <sup>th</sup>	Dry, wet and superheated compression	
	11 <sup>th</sup>	Effect of sub cooling, super heating,	
	12 <sup>th</sup>	Mass flow rate, entropy, enthalpy, work done	
4 <sup>th</sup>	13 <sup>th</sup>	Refrigerating effect and COP	2 <sup>nd</sup> Study of thermostatic switch,
	14 <sup>th</sup>	Actual vapour compression system	

	15 <sup>th</sup>	<b>Unit 3 Refrigerants</b> Functions	LP/HP cut out overload protector filters, strainers and filter driers.
	16 <sup>th</sup>	Classification of refrigerants	
5 <sup>th</sup>	17 <sup>th</sup>	Properties of R - 717, R – 22	<b>3<sup>rd</sup></b> Identify various parts of a refrigerator and window air conditioner (Cont.).
	18 <sup>th</sup>	R–134 (a) and CO <sub>2</sub> .	
	19 <sup>th</sup>	Properties of ideal refrigerant	
	20 <sup>th</sup>	<b>SESSIONAL I</b>	
6 <sup>th</sup>	21 <sup>st</sup>	selection of refrigerant	<b>3<sup>rd</sup></b> Identify various parts of a refrigerator and window air conditioner.
	22 <sup>nd</sup>	<b>Unit 4 Vapour Absorption System</b> Introduction	
	23 <sup>rd</sup>	Principle and working of simple absorption system	
	24 <sup>th</sup>	Domestic Electrolux refrigeration systems	
7 <sup>th</sup>	25 <sup>th</sup>	Solar power refrigeration system	<b>4<sup>th</sup></b> To find COP of Refrigeration system.
	26 <sup>th</sup>	advantages and disadvantages of solar power refrigeration system over vapour compression system	
	27 <sup>th</sup>	<b>Unit 5 Refrigeration Equipment 5.1 Compressor</b> - Function	
	28 <sup>th</sup>	Various types of compressors (Cont.)	
8 <sup>th</sup>	29 <sup>th</sup>	Various types of compressors	<b>5<sup>th</sup></b> To detect trouble/faults in a refrigerator/window type air conditioner (Cont.).
	30 <sup>th</sup>	<b>5.2 Condenser</b> - Function	
	31 <sup>st</sup>	Various types of condensers (Cont.)	
	32 <sup>nd</sup>	Various types of condensers	
9 <sup>th</sup>	33 <sup>rd</sup>	<b>5.3 Evaporator</b> - Function	<b>5<sup>th</sup></b> To detect trouble/faults in a refrigerator/window type air conditioner.
	34 <sup>th</sup>	Various types of evaporators (Cont.)	
	35 <sup>th</sup>	Various types of evaporators	
	36 <sup>th</sup>	<b>5.4 Expansion Valve</b> - Function	
10 <sup>th</sup>	37 <sup>th</sup>	Various types such as capillary tube, thermostatic	<b>6<sup>th</sup></b> Charging of a refrigerator/window type air conditioner (Cont.).
	38 <sup>th</sup>	Low side and high side float valves	
	39 <sup>th</sup>	<b>SESSIONAL II</b>	
	40 <sup>th</sup>	Application of various expansion valves	
11 <sup>th</sup>	41 <sup>st</sup>	<b>5.5. Safety Devices</b> -Thermostat, overload protector	<b>6<sup>th</sup></b> Charging of a refrigerator/window type air conditioner.
	42 <sup>nd</sup>	LP, HP cut out switch	

	43 <sup>rd</sup>	<b>Unit 6 Psychrometry</b> Definition, importance	
	44 <sup>th</sup>	Specific humidity, relative humidity, degree of saturation	
12 <sup>th</sup>	45 <sup>th</sup>	DBT, WBT, DPT	7 <sup>th</sup> Study of cut section of single cylinder compressor
	46 <sup>th</sup>	Sensible heat, latent heat	
	47 <sup>th</sup>	Total enthalpy of air. Psychrometry chart	
	48 <sup>th</sup>	Various processes of psychrometry (Cont.)	
13 <sup>th</sup>	49 <sup>th</sup>	Various processes of psychrometry	8 <sup>th</sup> Visit to an ice plant, cold storage plant, central air conditioning plant(Cont.).
	50 <sup>th</sup>	<b>Unit 7 Air-Conditioner</b> Study of window air-conditioning (Cont.)	
	51 <sup>st</sup>	Study of window air-conditioning	
	52 <sup>nd</sup>	Split type air conditioning (Cont.)	
14 <sup>th</sup>	53 <sup>rd</sup>	Split type air conditioning	8 <sup>th</sup> Visit to an ice plant, cold storage plant, central air conditioning plant.
	54 <sup>th</sup>	Concept of central air condition (Cont.)	
	55 <sup>th</sup>	Concept of central air condition	
	56 <sup>th</sup>	Automobile air-conditioning (Cont.)	
15 <sup>th</sup>	57 <sup>th</sup>	Automobile air-conditioning	VIVA- VOCE
	58 <sup>th</sup>	Revision of Syllabus	
	59 <sup>th</sup>	Revision of Syllabus	
	60 <sup>th</sup>	<b>SESSIONAL III</b>	