

# LESSON PLAN

**DEPARTMENT OF MECHANICAL ENGINEERING, ITT, CHOUDWAR**

**SUBJECT: RAC**

**Periods: 4 per week**

**SEMESTER: 5<sup>TH</sup>**

**NAME OF FACULTY: TRIPATHY DEBASIS, LECTURER(MECH)**

**No. of weeks: 15**

Week	Class Day	Theory / Practical Topics
1 <sup>st</sup>	1 <sup>st</sup>	AIR REFRIGERATION CYCLE. Definition of refrigeration and unit of refrigeration. Definition of COP, Refrigerating effect (R.E )
	2 <sup>nd</sup>	Principle of working of open and closed air system of refrigeration. Calculation of COP of Bell-Coleman cycle and numerical on it.
2 <sup>nd</sup>	1 <sup>st</sup>	SIMPLE VAPOUR COMPRESSION REFRIGERATION SYSTEM schematic diagram of simple vapors compression refrigeration system'
	2 <sup>nd</sup>	Types Cycle with dry saturated vapors after compression. Cycle with wet vapors after compression.
	3 <sup>rd</sup>	Cycle with superheated vapors after compression. Cycle with superheated vapors before compression. Cycle with sub cooling of refrigerant
	4 <sup>th</sup>	Representation of above cycle on temperature entropy and pressure enthalpy diagram Numerical on above (determination of COP, mass flow)
3 <sup>rd</sup>	1 <sup>st</sup>	VAPOUR ABSORPTION REFRIGERATION SYSTEM Simple vapor absorption refrigeration system
	2 <sup>nd</sup>	Practical vapor absorption refrigeration system
	3 <sup>rd</sup>	COP of an ideal vapor absorption refrigeration system
	4 <sup>th</sup>	Numerical on COP.
4 <sup>th</sup>	1 <sup>st</sup>	REFRIGERATION EQUIPMENTS REFRIGERANT COMPRESSORS
	2 <sup>nd</sup>	Principle of working and constructional details of reciprocating and rotary compressors. Centrifugal compressor only theory
	3 <sup>rd</sup>	Important terms. Hermetically and semi hermetically sealed compressor.
	4 <sup>th</sup>	CONDENSERS Principle of working and constructional details of air cooled and water cooled condenser
5 <sup>th</sup>	1 <sup>st</sup>	Heat rejection ratio. Cooling tower and spray pond.
	2 <sup>nd</sup>	EVAPORATORS Principle of working and constructional details of an evaporator.
	3 <sup>rd</sup>	Types of evaporator.
	4 <sup>th</sup>	Bare tube coil evaporator, finned evaporator, shell and tube evaporator.
6 <sup>th</sup>	1 <sup>st</sup>	REFRIGERANT FLOW CONTROLS, REFRIGERANTS & APPLICATION

		OF REFRIGERANTS EXPANSION VALVES
	2 <sup>nd</sup>	Capillary tube
	3 <sup>rd</sup>	Automatic expansion valve Thermostatic expansion valve
	4 <sup>th</sup>	REFRIGERANTS Classification of refrigerants Desirable properties of an ideal refrigerant.
7 <sup>th</sup>	1 <sup>st</sup>	Designation of refrigerant.
	2 <sup>nd</sup>	Thermodynamic Properties of Refrigerants. Chemical properties of refrigerants.
	3 <sup>rd</sup>	commonly used refrigerants, R-11, R-12, R-22, R-134a, R-717 Substitute for CFC
	4 <sup>th</sup>	Applications of refrigeration cold storage
8 <sup>th</sup>	1 <sup>st</sup>	dairy refrigeration ice plant
	2 <sup>nd</sup>	water cooler frost free refrigerator
	3 <sup>rd</sup>	Revision
	4 <sup>th</sup>	Revision
9 <sup>th</sup>	1 <sup>st</sup>	PSYCHOMETRICS & COMFORT AIR CONDITIONING SYSTEMS Psychometric terms
	2 <sup>nd</sup>	Adiabatic saturation of air by evaporation of water Psychometric chart and uses.
	3 <sup>rd</sup>	Psychometric processes Sensible heating and Cooling
	4 <sup>th</sup>	Cooling and Dehumidification Heating and Humidification
10 <sup>th</sup>	1 <sup>st</sup>	Adiabatic cooling with humidification Total heating of a cooling process
	2 <sup>nd</sup>	SHF, BPF, Adiabatic mixing
	3 <sup>rd</sup>	Problems on above. Effective temperature and Comfort chart
	4 <sup>th</sup>	Revision
11 <sup>th</sup>	1 <sup>st</sup>	CONDITIONING SYSTEMS
	2 <sup>nd</sup>	Factors affecting comfort air conditioning. .
	3 <sup>rd</sup>	Equipment used in an air-conditioning.
	4 <sup>th</sup>	Classification of air-conditioning system
12 <sup>th</sup>	1 <sup>st</sup>	Winter Air Conditioning System
	2 <sup>nd</sup>	Summer air-conditioning system.
	3 <sup>rd</sup>	Numerical on above
	4 <sup>th</sup>	Revision
13 <sup>th</sup>	1 <sup>st</sup>	Revision
	2 <sup>nd</sup>	Revision
	3 <sup>rd</sup>	Revision
	4 <sup>th</sup>	Revision

14 <sup>th</sup>	1 <sup>st</sup>	Revision
	2 <sup>nd</sup>	Revision
	3 <sup>rd</sup>	Revision
	4 <sup>th</sup>	Revision
15 <sup>th</sup>	1 <sup>st</sup>	Revision
	2 <sup>nd</sup>	Revision
	3 <sup>rd</sup>	Revision
	4 <sup>th</sup>	Revision

*H. T. Debar*

Sign. of Faculty