Lesson Plan on

(TH-5) REFRIGERATION & AIR CONDITIONING

(5th sem)

Prepared by

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PTGF ,MECHANICAL ENGG.

	GOVERNMENT POLYTECHNIC, PURIDEPARTMENTOFMECHANICALENGINEERING	
Discipline:**MECHANICALENGG**	Semester: **5TH**	Name of the Teaching Faculty: **MS CHINMAYEE JAYASINGH, PTGF IN MECH.ENGG.**
Subject: **REFRIGERATION AND AIR CONDITIONING**	No. ofdays/per week classallotted:**04**	Semester From date: **15.09.2022** ToDate:**22.12.2022** No.of Weeks:**15**
PRE-REQUISITE	Basic knowledge about different refrigeration system, air conditioning and its application.	
COURSEOUTCOMES	**CO1:**Explain the working of open &closed air refrigeration system. **CO2:**Describe the working and construction of compressor, Condenser, Evaporator expansion valve used for air conditioning and refrigeration. **CO3:** Explain Vapor Compression refrigeration system and Vapor Absorption refrigeration system. **CO4:**Compare different refrigerants properties. **CO5:** Describe equipment for air conditioning and explain the cooling load.	

Week	Class Day	Theory/Practical Topics	DELIVERY METHOD
1ST	1ST	Definition of refrigeration, unit of refrigeration,COP and Refrigerating Effect.	Whiteboard
	2ND	Principle of working of open and closed air system of refrigeration.	Whiteboard
	3RD	Calculation of COP of Bell-Coleman cycle.	Whiteboard
	4TH	Numerical based on Bell-Coleman Cycle.	Whiteboard
2ND	1ST	Schematic diagram of simple vapors compression refrigeration system and its types,Cycle with dry saturated vapors after compression.	Whiteboard
	2ND	Cycle with wet vapor after compression,Cycle with superheated vapor after compression. Cycle with superheated vapors before compression.	Whiteboard
	3RD	Representation of all the cycle on temperature entropy and pressure enthalpy diagram and numerical on it.	Whiteboard
	4TH	**QUIZ&ASSIGNMENT-I**	Lecturenotes
3RD	1ST	Simple vapor absorption refrigeration system.	Whiteboard
	2ND	Practical vapor absorption refrigeration system.	Whiteboard
	3RD	COP of an ideal vapor absorption refrigeration system and numerical on it.	Whiteboard
	4TH	**QUIZ & ASSIGNMENT-II**	Whiteboard
4TH	1ST	Principle of working and constructional details of reciprocating and rotary compressors.	Whiteboard
	2ND	Centrifugal compressor and terms related to it.Hermetically and semi hermetically sealed compressor.	Whiteboard
	3RD	Principle of working and constructional details of air cooled and watercooled condenser,Heat rejection ratio.	Whiteboard
	4TH	Cooling tower and spray pond, Principle of working and constructional details of an evaporator.	Whiteboard
5TH	1ST	Types of evaporator, Bare tube coil evaporator, finned	Whiteboard

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		evaporator, shell and tube evaporator.	
	2ND	Expansion Valves, Capillary tube	Whiteboard
	3RD	Automatic expansion valve, Thermostatic expansion valve	PPT
	4TH	Classification of refrigerants, Desirable properties of an ideal refrigerant, Designation of refrigerant	Whiteboard
6TH	1ST	Thermodynamic Properties of Refrigerants, Chemical properties of refrigerants	Whiteboard
	2ND	Commonly used refrigerants, R-11, R-12, R-22, R-134a, R-717 , Substitute for CFC	Whiteboard
	3RD	Applications of refrigeration,cold storage, dairy refrigeration, ice plant, water cooler, frost free refrigerator	Whiteboard
	4TH	**QUIZ&ASSIGNMENT-III**	Lecturenotes
7TH	1ST	PSYCHOMETRIC & AIR CONDITIONING SYSTEM	Whiteboard
	2ND	Psychometric terms, Adiabatic saturation of air by evaporation of water	Whiteboard
	3RD	Psychometric chart and uses.	Whiteboard
	4TH	Psychometric processes i.e. Sensible heating and Cooling, Cooling and Dehumidification,Heating and Humidification,	Whiteboard
8TH	1ST	Adiabatic cooling with humidification, Total heating of a cooling process, SHF, BPF, Adiabatic mixing	Whiteboard
	2ND	Numerical on all the process	Whiteboard
	3RD	Effective temperature and Comfort chart	Whiteboard
	4TH	**QUIZ & ASSIGNMENT-IV**	Whiteboard
9TH	1ST	AIR CONDITIONING SYSTEMS	Whiteboard
	2ND	Factors affecting comfort air conditioning, Equipment used in an air-conditioning.	Whiteboard
	3RD	Classification of air-conditioning system, Winter Air Conditioning System	Whiteboard
	4TH	Summer air-conditioning system, Numerical on different air conditioning system	Lecturenotes
10TH	1ST	REVISION	Whiteboard
	2ND	REVISION	Whiteboard
	3RD	REVISION	Whiteboard
	4TH	REVISION	Whiteboard
11TH	1ST	REVISION	Whiteboard
	2ND	Problemsolving	Whiteboard
	3RD	**QUIZ&ASSIGNMENT-V**	Lecturenotes
	4TH	REVISION	Whiteboard
12TH	1ST	REVISION	Whiteboard
	2ND	REVISION	Whiteboard
	3RD	REVISION	Whiteboard
	4TH	REVISION	Whiteboard
13TH	1ST	Problemsolving	Whiteboard
	2ND	Problemsolving	Whiteboard
	3RD	Problemsolving	Whiteboard
	4TH	**QUIZ&ASSIGNMENT-VI**	Lecturenotes
14TH	1ST	REVISION	
	2ND	REVISION	
	3RD	REVISION	
	4TH	REVISION	
15TH	1ST	REVISION	
	2ND	REVISION	
	3RD	REVISION	
	4TH	REVISION	

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LEARNINGRESOUCES:

01:REFRIGERATION AND AIR CONDITIONING BY C.P ARORA

02;REFRIGERATION AND AIR CONDITIONINGBY R.S.KHURMI &J.K.GOPTA

WEBSITERESOUCES:

01. https://youtube.com/playlist?=PLfUUbFVTz-XcXbSUD0BXdOcGxFGkcdLXa(NPTEL)
02. https://youtube.com/playlist?list=PLEaHqdgEVu6rgimtDDFGVcCfMPLp1q(NPTEL)

Chinmayee Jayasingh.

Sign. of Facultyconcerned

17/9/22

Principal
G.PPuri

12/09/22

Sign.of HODi/c

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