



**Pimpri Chinchwad Education Trust's
Pimpri Chinchwad College of Engineering**



HVAC Course Outline/ MoM

Department: Mechanical **Academic Year:** 2021-2022 **Semester:** I
Class / Div. : B.E. (A/B/C) **Sub:** Refrigeration and Air Conditioning **Date:** 21/06/2021

Points discussed during Course Meeting:

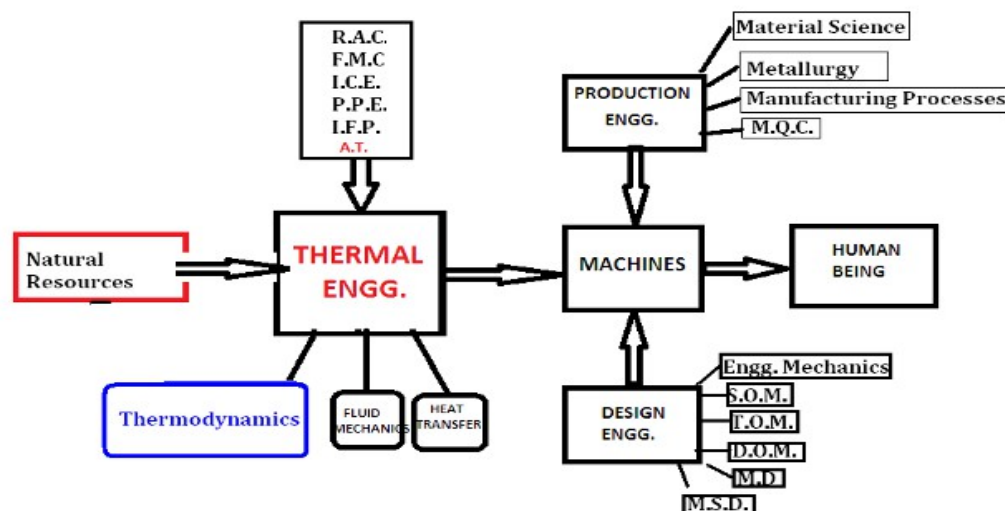
Course Meeting was conducted on 18/06/2021 (Thursday) at 4: 00 PM and following points were discussed for effective content delivery

- Discussion was carried out on CO finalization and assessment tools which are mentioned in detail in below table.
- Given the current pandemic situation, entire theory course and practical syllabus will be covered through online mode like Google Meet /Flipped classroom mode like Bodhi tree.
- It was also decided to give one Assignments for assessment of understanding of course content.
- Due to online mode total 38 Sessions are planned for covering theory syllabus and 5 sessions are planned for Term work syllabus
- Experiments will be practical conducted and demonstrated by course faculty through online/ flipped mode to students.

Relevance of Subject:

In HVAC; Refrigeration is related to cooling a confinement w.r.t surrounding whereas air conditioning is related to providing comfortable environment. This subject is related to enormous applications, right away from household refrigerator to air conditioning for increasing product quality. Food preservation, Cold storage, Ice making, Dairy, Textile, Restaurants, Breweries, Medical few among many applications of Refrigeration and Air Conditioning. Hence knowledge of this subject is of utmost important

Engg.



for a
Mechanical
Graduate.

Prerequisite:

Thermodynamics: Laws of thermodynamics, Ideal gas processes, Thermodynamic cycles, Properties of pure substance, Mollier Charts, Basic Psychrometry terms and process, Fluid properties, Fluid dynamics,

Heat Transfer : Basic principles, Heat transfer rate estimation, Heat exchanger, Boiling & Condensation

Fluid Mechanics: Flow rate, pressure drop calculation

Teaching Scheme:

[illegible]

Course Outcomes:

Course Outcomes:	Method of Assessment
CO1- <u>Evaluate</u> the performance of trans-critical and ejector refrigeration system.	Unit Test 1
CO2- <u>Analyze</u> the thermal performance of compressor, evaporator, condenser and cooling tower	Unit Test 1
CO3- <u>Design</u> the refrigerant piping of vapor compression system	Unit Test-2
CO4- <u>Evaluate</u> the importance of indoor and outdoor design conditions, IAQ,	Unit Test-2
CO5- <u>Estimate</u> the heat load of building by using different methods like CLTD/ ETD	Assignment 1
CO6- <u>Analyze</u> the performance of advance air conditioning system	Assignment 1

Additional Activities:

- ## 1. Quiz competition

Topics beyond syllabus:

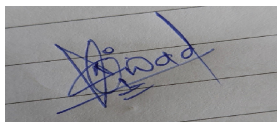
1. Introduction to EvapCal software tool

Text Books:

1. Arora C. P., Refrigeration and Air Conditioning, Tata McGraw-Hill
2. Manohar Prasad, Refrigeration and Air Conditioning, Willey Eastern Ltd, 1983
3. McQuiston, — Heating Ventilating and air Conditioning: Analysis and Design 6th Edition, Wiley India
4. Arora and Domkundwar, Refrigeration & Air Conditioning, Dhanpatrai & Company, New Delhi
5. Khurmi R.S. and Gupta J.K., Refrigeration and Air conditioning, Eurasia Publishing House Pvt. Ltd, New Delhi, 1994.
6. Ballaney P.L., Refrigeration and Air conditioning, Khanna Publishers, New Delhi, 1992

Reference Books:

1. Dossat Ray J, Principles of refrigeration, S.I. version, Willey Eastern Ltd, 2000
2. Stockers W.F and Jones J.W., Refrigeration and Air conditioning, McGraw Hill International editions 1982.
3. Threlkeld J.L, Thermal Environmental Engineering, Prentice Hall Inc., New Delhi 4.
4. Aanatnarayan, Basics of refrigeration and Air Conditioning, Tata McGraw Hill Publications
5. Roger Legg, Air Conditioning System Design, Commissioning and Maintenance
6. ASHRAE & ISHRAE handbook



Mr. Nilesh Gaikwad

Course Coordinator