

HVAC

Syllabus

1. Introduction to HVAC

- Fundamental and scope of HVAC
- Mode of heat transfer
- Standards
- Refrigeration cycle
- Component of A/C
- Refrigerants and types

2. Classification of Air-Conditioning System

- Window Air Conditioning Systems.
- Split Air Conditioning Systems
- . Central Air Conditioning Systems.
- Package Air Conditioning Systems.

3. Fundamental and scope of HVAC

- Air cooled system of air conditioning.
- Chilled water system of air conditioning.
- Air water system of air conditioning.
- Direct refrigerant system of air conditioning.

4. Study of Psychometric

- Properties of Air (DBT, %RH, WB, DPT, enthalpy).

5. Load Calculation.

- Orientation of Building
- To Read Latitude of Location of building
- Calculation of U factor for wall, glass, Roof and Partition
- Calculation of Equivalent Temp.
- Difference for wall, glass, Roof and Partition
- Cooling and Heat Load Calculation using
- ASHRAE Standards
- Calculation Of sensible Heat Factor, ADP and Dehumidified CFM

6. Chilled water system

- Definition of STHE & Explain.
- Study about Chilled Water Systems
- Types & Application of Chillers
- Open loop & Closed loop system- Chilled water pipe sizing
- Types of Valves & Its Connection, Valve Authority
- Primary and Secondary pump system,
- Hydraulic Calculation for Pump Selection
- Expansion Tank Sizing, Air Separator, Pump Cavitations, Pump Curves
 - ❖ NPSH Calculation for Pumps, Advance Psychrometric Analysis, Determine Mix Air
 - ❖ Temperature, Calculate the Flow of Air, ESHF, Ton of Refrigeration, Design of CAV & VAV System.
 - ❖ Components of Chilled Water system
 - ❖ Heat Gain Calculation
 - ❖ Manual Calculation
 - ❖ Hour analysis Program
 - ❖ Cooling and Heating Load calculation using Hourly Analysis Program (HAP)

7. Duct Designing

- Calculation of duct sizes by Mc-Quay Duct Sizer

8. Equipment and Air Terminal

- Air terminal selection.
- Cold storage selection
- Selection of Materials of Ducts.
- Primary and secondary pump selections.
- Duct material selection.
- Selection of cooling tower.
- Selection of Chillers.
- AHU and FCU classification and selection.
- Package unit selection DX unit selection
- Section dwg

9. Pipe Designing

- Refrigerant Pipe sizing. Chilled water pipe sizing.
- Calculation of Chilled water pipe sizes by Mc-Quay pipe Sizer Software,

10. ESTIMATION OF PROJECT

- Understanding the tendering requirements
- BOQ (Bill of quantities).

11. Pump Head Calculation

12. Static Pressure Calculation

- Selection of Motor HP
- Selection Fan/Blower RPM

13. Ventilation and Fresh Air

- Ventilation, Infiltration load calculations.
- Restaurant and residence kitchen ventilation system design.
- Parking area ventilation and designing.
- Toilet ventilation (Industrial and residential).
- Evaporative Losses calculation in cooling towers.

ESP CALCULATION

- Stairwell pressurization system designing.

DRAFTING OF HVAC SYSTEMS

- Introduction to Drafting,
- Types of Drawings used in the industry,
- Study & Preparation of Floor Drawings,
- Roof Drawings,
- Sectional Drawings
- Prepare the company title block by using logos