

HVAC DESIGN AND DRAUGHTING

AS PER ASHRAE, ISHRAE AND SMACNA STANDARDS

INTRODUCTION - HVAC DESIGN AND DRAUGHTING

This diploma certification programme specializes in full analytical load calculations, ventilation system designing, duct designing, air distribution system designing, sizing pipes and pumps, estimation of requirements, and all HVAC equipment selections as per and SMACNA standards. We offer high quality training in designing and draughting along with cost effective and prompt HVAC design system services. The accuracy and effectiveness project are the main highlights we are referred to. The training provided by the academy is fruitful as it includes on-site training and practical knowledge.

DESCRIPTION

MEP | STRUCTURAL | BMS

HVAC is a major sub discipline of mechanical engineering deals with the technology of indoor air quality management of buildings and human comfort. HVAC system designing deals with heating, ventilation systems designing, air conditioning, refrigeration system designing and equipment selection.

TRAINING FACILITIES

- Experienced Engineers as Faculties.
- Excellent Materials Provided. (Manuals, Demo softwares, Design Chart, Drawings of sample Projects etc.).
- Excellent and Efficient Placement Cell.
- Onsite Training.

HVAC DESIGNING AND DRAUGHTING - COURSE CONTENT

FUNDAMENTALS

- Introduction to HVAC.
- Scope of designing.
- Basics and importance of HVAC.
- Future advancements in HVAC.
- Standards and codes used in HVAC.
- Modes of heat transfer in a building.
- Basic components of air conditioning.
- Types of refrigeration cycles.
 - Vapor absorption refrigeration system.
 - Vapor compression refrigeration system.
- Study on psychometric charts (manual and software).
Properties of Air (DBT, %RH, WB, DPT, enthalpy).
- Study on refrigerants.
 - Types of refrigerants.
 - Evaporating & condensing properties of refrigerants.
- Types of air conditioning systems.
 - Window Air Conditioning Systems.
 - Split Air Conditioning Systems.
 - Central Air Conditioning Systems.
 - Package Air Conditioning Systems.
- Categories of air conditioning.
 - Air cooled system of air conditioning.
 - Chilled water system of air conditioning.
 - Air water system of air conditioning.
 - Direct refrigerant system of air conditioning.
- Design of Ventilation system.
Introduction to Ventilation system.
Components of Ventilation system.
- Heat Pumps

HVAC DESIGN CALCULATIONS

- Load calculation using E 20 manual calculation.
- Ventilation, Infiltration load calculations.
- Restaurant and residence kitchen ventilation system design.
- Parking area ventilation and designing.
- Toilet ventilation (Industrial and residential).
- External static pressure (E.S.P) calculation for selection of motor and fan.
- Pump size and hydraulic head calculation for chilled water in pipe sizing.
- Evaporative Losses calculation in cooling towers.
- Stairwell pressurization system designing.
- Cold storage designing.
- Study on ducts and its types.
- Study on air distribution systems.
 - Types of ducts, Duct fittings, Dampers, Types of diffusers, Flexible ducts etc.
 - Duct elbows selections
 - Vanes location & number of vanes required
 - Duct material calculation
- Duct designing methods (manual calculations) using.
 - Equal friction method.
 - Velocity reduction method.
 - Static regain method.
- Pipe sizing methods.
 - Refrigerant Pipe sizing.
 - Chilled water pipe sizing.

EQUIPMENT SELECTION

- 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.

ESTIMATION OF PROJECT

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

SOFTWARE DESIGNING

- Cooling and heating load calculation using Hourly Analysis Programme (**HAP**).
- Calculation of duct **Mc Quay Duct sizer** and **Duct Checker**.
- Calculation of pipes **Mc Quay pipe sizer**.
- Air terminal selection by using **BETA** Programme.

DRAFTING

- Introduction to Drafting using **Auto CAD**.
- Fundamentals and basics of HVAC.
- Symbols and codes used in HVAC designing.
- Types of Drawings used in the industry.
- Study & Preparation of Floor Drawings.
- Conventional type air conditioning system drawings.
 - Window air conditioning system drawing.
 - Split air conditioning system drawing.
 - Cassette-type air conditioning system drawing.
- Ventilation system drawings.
 - Kitchen hood drawing.
 - Car parking ventilation drawing.
 - Toilet ventilation drawing.
- Chilled water pipe drawing.
- Ductable air conditioning system drawing.
- Package air conditioning system drawing.
- Section drawings of projects.
- 3D Modeling using **REVIT MEP** (optional).