1. HVAC - HEATING VENTILATION AND AIR CONDITIONING

1. INTRODUCTION
2. HEAT
   a. Types of Heat
   b. Latent Heat
   Mode of Heat Transfer:
   c. Conduction
   d. Convection
   e. Radiation
3. VENTILATION
   a. Introduction
   b. Calculation of CFM
   c. Calculation of ACPH
   d. Calculation of CMH
   e. Types of Ventilation
   f. Positive Pressure
   g. Negative Pressure
   h. Types of Ventilation Fans
4. AIR CONDITIONING
   a. Properties of Air
   b. Dry bulb Temperature
   c. Wet bulb Temperature
   d. Relative Humidity
   e. Dew Point Temperature
   f. Ton of Refrigeration
5. TYPES OF AIR-COMINGING Direct System
   a. Window AC
   b. Split AC
   c. VRF System
   d. Air Handling Unit
e. Fan Coil Unit
   f. Chilled Water System
6. HEAT LOAD CALCULATION
   a. Glass
   b. Wall
   c. Roof & Floor
   d. Partition
   e. Ceiling
   f. Lighting
g. Electronics Equipment
   h. Occupancy
7. SELECTION OF INDOOR & OUTDOOR UNITS
8. AIR TERMINAL SYSTEM
   a. Diffuser
   b. Types of diffuser
   c. Calculation of neck size
   d. Placement of diffuser
   e. Grill
   f. Calculation of size of grill
   g. Types of grill
9. AIR DISTRIBUTION SYSTEM
   a. Duct
   b. Types of duct
   c. Designing of duct
   d. Flexible Duct
   e. Duct
   f. Calculation of size of plenum box
10. AIR DISTRIBUTION SYSTEM
    a. Chiller
    b. Cooling Tower
    c. Pipe Design
    d. GPM Calculation
    e. Pump Head Calculation
11. BILL OF QUANTITY PREPARATION
12. DUCT MATERIAL CALCULATION
13. PIPE MATERIAL CALCULATION
14. STATIC PRESSURE CALCULATION
15. SPECIFICATION ON HVAC
16. SUPPORT AND ACCESSORIES IN HVAC
17. TESTING AND COMMISSIONING
18. SOFTWARE
   a. Auto cad - 2D Design
   b. 3D design
   c. MEP - Revit Design
   d. Heat Load Excel Sheet
   e. Cooling Load Calculation
19. REVIT - 3D DESIGN
20. FINAL PROJECT

2. ELECTRICAL DESIGNING & DRAFTING

1. INDUSTRIAL SAFETY
   a. Safety, hazards and accidents PTW
   b. Emergency properness plan
   c. PPE
2. FIRE
   a. Fire detectors and alarm
   b. Sounders and manual call point's
   c. Evacuations system
   d. Fire alarm layout
3. ELECTRICAL DRESSING TECHNIQUES
   a. Cable glanding and termination
   b. Cable tray and trunking
   c. Electrical Conduits
4. WIRING
   a. Electrical wiresystem
   b. Types of wiring system
   c. Types of wires
5. FUNDAMENTAL OF ELECTRICITY
   a. Introduction and laws
   b. Types of electrical connections
   c. Basics of generator
   d. Basics of motor
   e. Basics of transformer
   f. Basics of battery maintenance of battery
6. ELECTRIFICATION AND LIGHTING
   a. Types of earthing system
   b. Lighting protection
7. SWITCH GEARS
   a. MCB, RCB, ELCB, SF6, RCCB, ACB, VCB
   b. Types of Panel
     a. Types of Panel
8. BUSBARS
   a. Types of bus bars
   b. Bus bars
   c. Mountings
   d. Protection
   e. Bus bars layout
   f. SLD
   g. Electrical symbols
   h. Electrical layout for building
9. LIGHTING AND LIGHTING SYSTEMS
   a. Introduction
   b. Terminology
   c. Types of lamps
   d. Lighting control
   e. Lighting standards
   f. Types of lights and layout
   g. Emergency lighting design
10. STANDARD 4eCODES
    a. Designing as per electrical standards
    b. Dewa, adewa, addc,
    c. Kharama, etc
11. CCTV
    a. CCTV introduction
    b. Components
    c. Installation procedure
    d. FAP,PAVA, emergency lighting
    e. Communication layout
    f. ELV systems

3. FIRE FIGHTING

1. BASICS OF FIRE FIGHTING
   a. Basics of fire fighting
   b. Fire fighting standards
   c. Fire fighting pipe materials
   d. Fire legends
2. EXPLANATIONS OF NFPA CODES
   a. Overview of NFPA 10
   b. Overview of NFPA 13 D
   c. Overview of NFPA 13 R
   d. Overview of NFPA 14
   e. Overview of NFPA 15
3. FIRE PROTECTION SYSTEM
   a. Active fire protection system
   b. Passive fire protection system
4. CLASSIFICATION OF FIRE
   a. Classification of occupancies
   b. Classification of hazards
5. DESCRIPTION OF FIRE HAZARD
   a. Description of fire hazard
   b. Classification of hazards
6. TYPES OF SPRINKLER SYSTEM
   a. Types of sprinkler system
   b. Explanation of Wet sprinkler system
   c. Explanation of Dry sprinkler system
d. Description of Pre - Action sprinkler system
e. Explanation of Automatic sprinkler system
7. DESCRIPTION OF SPRINKLER AND HOLE SYSTEM
   a. Sprinkler system explanation
   b. Types of sprinkler
   c. Selection of sprinkler
   d. Hose reel system
8. FIRE EXTINGUISHERS DETAILS AND ARRANGEMENTS
   a. Types of extinguishers
   b. Arrangements of fire extinguishers
   c. Applications of fire extinguishers
9. DETAILS & DESIGN OF ZONE CONTROL VALVE
   a. Description of zone control valve
   b. Design of zone control valve
10. FIRE FIGHTING DESIGN CRITERIA
    a. Sprinkler design
    b. Sprinkler arrangements
    c. Pipe sizes
11. DESIGN OF FIRE SUPPRESSION SYSTEM
    a. Design of fire suppression system
12. EXTERNAL FIRE FIGHTING DESIGN
    a. Design of Fire Hydrants
    b. Design of Breaching Inlet
13. DESCRIPTION OF FIRE PUMPS
    a. Detailed description of fire pumps
    b. Types of pumps
14. FIRE PUMP ROOM DETAIL
    a. Fire pump installation details
    b. Fire equipments design
    c. Fire pump rooms line sketch
d. Pipe and equipments support details
15. FIRE PUMP CALCULATION
    a. Pump head calculations
16. FIRE FIGHTING HYDRAULIC CALCULATION
    a. Hydraulic calculation
17. FIRE FIGHTING TECHNIQUES
    a. Site photos presentation
    b. Establishments of new creativities
    c. Fire Fighting techniques
18. DESCRIPTION OF FIRE FIGHTING LAYOUTS
    a. Detailed description of design drawings
    b. Sectional layouts preparations
c. Bill of Quantity preparations
19. LAYOUT PREPARATION PROCEDURES
    a. Design drawings preparation procedures
    b. Shop drawing preparation procedures
20. GENERAL DRAWING PREPARATION PROCEDURES
    a. Schematic drawing preparation procedures
    b. Shop drawing preparation procedures
c. Sectional layouts preparations
d. Bill of Quantity preparations
21. PROJECT
    a. Commercial Building Fire Fighting Design
    b. Residential Building Fire Fighting Design
c. Airport Fire Fighting Design
    d. Hospital Building Fire Fighting Design
4. PLUMBING DESIGNING

1. BASIC PLUMBING

2. HYDRAULIC PRINCIPLES
   a. Pascal’s law
   b. Volume/Velocity
   c. Backflow
   d. Backflow Responsibilities
   e. Types of backflow preventers

3. PATHOGENS
   a. Hippocrates
   b. Black plague
   c. Viral diseases
   d. Water borne diseases

4. PLUMBING FITTING
   a. Plastic Pipe

5. PLUMBING REPAIRS
   a. Toilets
   b. Showers
   c. Noises

6. DRAIN & VENTS

7. WATER DISTRIBUTION
   a. Rotary valves
   b. Type of pipes
   c. Distribution Fittings
   d. Water main installation

5. REVIT MEP SYLLABUS

- Building information Modeling
- Building information Modeling (BIM)
- Revit MEP Basics Overview of the interface
- Standard Terminology
- Starting Projects
- Viewing Commands Basics Drawing & Editing Tools
- General Drawing Tools
- Editing Elements
- Standard Modifying Tools
- Helpful Editing Tools
- Starting MEP Projects
- Linking in Architectural Projects
- Introduction to Architecture
- Copying & Monitoring Objects
- Setting Up Levels
- Working with Views
- Duplicating Views
- Adding Callout Views
- Setting The View Display
- Creating Elevations
- Creating Sections
- Working With Ceilings
- Understanding Revit
- MEP Systems
- Working with Schedules
- Creating Schedules
- Working with Dimensions
- Working with Text
- Adding Detail Lines & Symbols
- Creating Legends
- Tag & Schedules
- Adding Tags
- Detailing in Autodesk
- About MEP Systems
- HVAC Systems
- About HVAC System
- Adding Air Terminals & Mechanical Equipment
- Adding Ductwork
- Creating Duct Systems
- Automatic Ductwork Layouts