BRITISH ENGINEERING INSTITUTE

# JP JACOBS

INTERNATIONAL RESEARCH FOUNDATION UK

BEST MEP COURSES

CPD MEMBER
The CPD Certification Service

UK

+919544644599 (INDIA) | +97431523999 (QATAR) | +44 7310 028064 (UK) | +1 (845) 363-7564 (USA)

ACTD

AMERICAN COUNCIL OF TECHNICAL EDUCATION

BEST SHORT TERM JOB ORIENTED

# MEP COURSES

Engineering Council of India

BRITISH ENGINEERING INSTITUTE

# JP JACOBS

INTERNATIONAL RESEARCH FOUNDATION UK

## Introduction of

# JP JACOBS INTERNATIONAL RESERCH FOUNDATION

We, JP Jacobs international Research Foundation is principally promoting Engineering Research works in various fields of Engineering, especially in the MEP Engineering ( HVAC , Fire Fighting , Plumping ,Electrical)

JP Jacobs International Research Foundation guide the engineers to find the proper career paths through our job-oriented technical courses and we are aiming to nourish the engineers with thorough knowledge in relevant engineering fields, especially in the MEP systems

MEP ( HVAC , Fire Fighting , Plumping ,Electrical) is the very vast subject in engineering and the engineers can certainly find the job after the engineering study , particularly Mechanical engineers, and electrical engineers

GCC and European countries is the greatest platform to the engineers to find the best career after their engineering study with best MEP knowledge. Engineering students must carry with international standers to meet the minimum requirement for find the suitable job.

We, JP Jacobs international Research Foundation study wisely and established a Job oriented MEP courses to the engineers , that can help the engineers to meet the suitable job

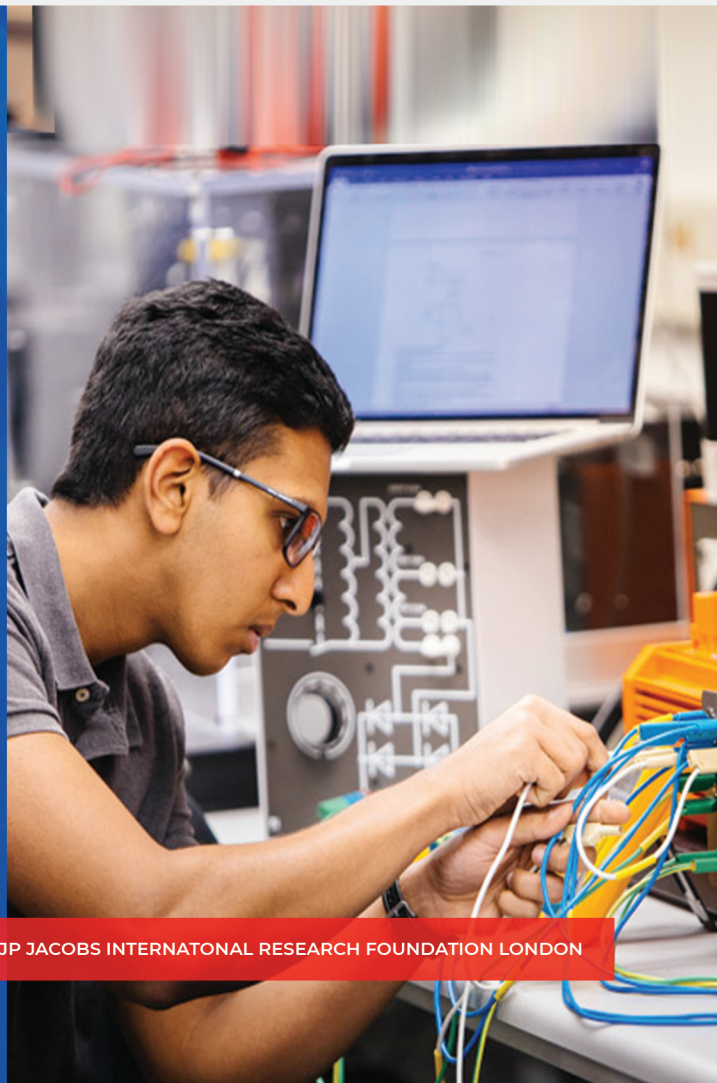
## EDUCATIONAL LICENCES OF JP JACOBS

**JP JACOBS INTERNATIONAL UNIVERSITY** is a high-ranking education establishment registered at USA File Number: 5853200, which accredited by CPD -UK , AMERICAN COUNCIL OF TRAINING AND DEVELOPMENT – USA , ISO 9001:2015.and tie up with many international universities.Affiliated with California University FCE, Los Angels ,USA

**JP JACOBS INTERNATIONAL RESEARCH FOUNDATION LONDON** incorporated under the Act 2006 as its registered office is in England and Wales , registration Schedule 2 of the (Model Articles) Regulations 2008 ,Registration Number 13563015 .

Also, **JP JACOBS INTERNATIONAL RESEARCH FOUNDATION** is duly incorporated under the State Laws at United States of America, State Original ID: 2021-000993061, as conducting Engineering Research activities and promoting Technical Education.

Additionally, JP Jacobs international Research Foundation is Licensed under section 8(1) incorporation Government of India, License Number – 123136. Corporate Identity Number is U80302KL2021NPL067052. It is a Non-Profit Organization (NPO) as per the Indian act



**PROGRAMS ARE CONDUCTING JP JACOBS INTERNATIONAL UNIVERCITY USA & JP JACOBS INTERNATONAL RESEARCH FOUNDATION LONDON**

BRITISH ENGINEERING INSTITUTE
JP JACOBS
INTERNATIONAL RESEARCH FOUNDATION UK

# POST GRADUATE DIPLOMA IN ELECTRICAL ENGINEERING

## Module 1: Basics of Electrical

### Chapter 1: Introduction to Electrical

11.1 Fundamentals of Electrical Engineering
1.2 Types of Electricity
1.3 Sources of Electricity
1.4 Generation, Transmission, Distribution and Utilization of Electricity
1.5 Ohm's Law
1.6 Electrical Terms and terminology
1.7 Categorization of Loads
1.8 Electrical Associations, Codes and Standards.

### Chapter 2: Electrical Equipment's

2.1 Transformers
2.2 Motors
2.3 Generators
2.4 Capacitors
2.5 Bus bars, Bus ducts
2.6 Control Devices
2.7 Measuring Devices
2.8 Isolators
2.9 UPS

## Module 2: Electrical Load Calculation

### Chapter 1: Categorization of Electrical Loads

1.1 Lighting Load
1.2 Equipment Load
1.3 Utility Load
1.4 HVAC Loads
1.1 Lighting Load
1.2 Equipment Load
1.3 Utility Load
1.4 HVAC Loads

### Chapter 2: Electrical Loads and Calculation

2.1 Lighting load calculation based on LUX level
2.2 Power Load calculations
2.3 Circuit Connections
2.4 Circuit breakers calculation
2.5 Types of Circuit Breakers -MCB, MCCB, ACB, VCB & RCCB
2.6 Short Circuit current calculations
2.7 Capacitor bank calculations and sizing
2.8 Voltage Drop calculation
2.9 Transformer capacity calculations and sizing

### Chapter 3: Earthing

3.1 Why earthing is important?
3.2 Earthing Methods
3.3 Earthing area calculations
3.4 Earthing conductor sizing

### Chapter 4: Diesel Generator

4.1 Types of DG Set
4.2 Calculation of DG Set

### Chapter 5: UPS

5.1 Types of UPS
5.2 UPS Calculation

## Module 3: Power System Design

### Chapter 1: Power Sockets

1.1 Types of Power Sockets
1.2 3 Pin Socket connections
1.3 2 Pin Socket connections
1.4 Wiring Diagram of control switch board

### Chapter 2: Wires and Cables

2.1 Classification of wire
2.2 Selection of wire
2.3 Sizing of wire
2.4 Classification of cables
2.5 Selection of cables
2.6 Sizing of cables
2.7 Resistance and impedance for cables

### Chapter 3: Cable Routing

3.1 cable conduits
3.2 Cable Trays

## Module 4: Schematic Drafting of Electrical

4.1 Preparation Symbols & Legends of Electrical System
4.2 Preparation of detail layouts including sectional details wherever required
4.3 Representation of Design drawing
4.4 Preparation of Single line Schematic & isometric Drawing of Wiring, lights, other required sections.

## MODULE 5: Project Documents

5.1 Preparing Master BOQ or Estimation Quotation for the project.
5.2 Cable Schedule Preparation

DIPLOMA IN MEP ENGINEERING SUBJECTS WILL VARY

# POST GRADUATE DIPLOMA IN FIRE FIGHTING ENGINEERING

BRITISH ENGINEERING INSTITUTE
JP JACOBS
INTERNATIONAL RESEARCH FOUNDATION UK

## MODULE 1: Introduction to FP&FA.

### Chapter 1: Basics of FP & FA

1.1 What is Fire Protection?
1.2 What is fire triangle?
1.3 Why Fire Protection System is needed?
1.4 What is Fire Alarm System?
1.5 Why is Fire Alarm needed?
1.6 Fire Associations, codes and standards.
1.7 Fundamentals of Fire System

## MODULE 2: Building Classification for Life Safety

### Chapter 2: Building Classification

2.1 General Requirements for fire safety in the buildings.
2.2 Classification of Buildings for fire protection.

## MODULE 3: Fire Protection System

### Chapter 3: Fire Protection System

3.1 Fundamentals of Fire Protection system.
3.2 Classification Fire Fighting system

### Chapter 4: Sprinkler System

4.1 Sprinkler System – Dry & Wet Riser Systems
4.2 Types of Sprinklers
4.3 Pipe Sizing in sprinkler system
4.4 Sump Capacity Calculation
4.5 Over Head Tank Capacity Calculation

### Chapter 6: Piping Materials

6.1 Various Piping Materials
6.2 Properties of Piping Materials
6.3 Metallic Pipes
6.4 Non-Metallic Pipes

### Chapter 5: Piping fixtures and valves.

***Fittings***

5.1 Fittings: Elbow
5.2 Tee 5.3 Reducer
5.4 Cross
5.5 Coupling
5.6 Union 5.7 End Cap
5.8 Y-Bend
5.9 Return Bend
5.10 Puddle Flange

***Accessories***

5.11 Valves (Gate, Globe, Angle)
5.12 Strainer
5.13 Flexible Connections 5
.14 Pressure Gauge
5.15 N R V (Non-Return Valve)

### Chapter 7: Pump Capacity Calculations

7.1 Introduction to Pumps
7.2 Types of Pumps
7.3 Pump Selection criteria
7.4 Pump Head loss Calculation
7.5 Pump Capacity calculation
7.6 Booster pump Capacity calculation

## MODULE 4: Fire Alarm System

### Chapter 8: Fire Alarm System

9.1 Classification of Fire Alarm System
9.2 Types of sensors
9.3 Fire Panel Selection

### Chapter 9: Public Address System

9.1 Classification of PA System.
9.2 Selection of PA system.

## MODULE 5: Fire Suppression System

### Chapter 10:

10.1 FM200 Gas Suppression system.
10.2 Stairwell pressurization system.

## MODULE 6: Piping Layout Drafting

### Chapter 11: Schematic Drawings preparation

11.1 Studying Layout
11.2Symbols and Legends
11.3 Drawing SLD
11.4 Elevation Drawings
11.5 Preparation of shop drawings

DIPLOMA IN MEP ENGINEERING SUBJECTS WILL VARY

# POST GRADUATE DIPLOMA IN PLUMBING ENGINEERING

BRITISH ENGINEERING INSTITUTE
JP JACOBS
INTERNATIONAL RESEARCH FOUNDATION UK

## MODULE 1: Introduction to Plumbing.

### Chapter 1: Basics of Plumbing

1.1 What is plumbing Engineering?
1.2 Why is plumbing needed?
1.3 Plumbing Associations, codes, and standards.
1.4 Fundamentals of Plumbing System.

## MODULE 2: Basics of Fluid Mechanics

### Chapter 2: introduction to Fluid Mechanics

1.1 Types of Flow
1.2 Types of Water
1.3 Continuity Equations
1.4 Units and Conversion
1.5 Hazen Williams Formula
1.6 Velocity of Liquid in open Channel Manning's Formula

## MODULE 3: Plumbing System

### Chapter 3: Water Supply Systems

1.1 Fundamentals of water supply system.
1.2 Types of water supply system (Hot and Cold)

### Chapter 5: Domestic Water Distribution System

5.1 Requirement of water supply system
5.2 Water quantity requirement calculation
5.3 Sump -Underground storage capacity calculation
5.4 Over Head tank calculation
5.5 Types of Pumping systems

### Chapter 6: Piping fixtures and valves.

*Fittings*
6.1 Fittings: Elbow
6.2 Tee
6.3 Reducer
6.4 Cross
6.5 Coupling
6.6 Union
6.7 End Cap
6.8 Y-Bend
6.9 Return Bend
6.10 Puddle Flange

*Accessories:*
6.11 Valves (Gate, Globe, Angle)
6.12 Pressure Reducing Valve
6.13 Water Hammer Resistor
6.14 Strainer
6.15 Float Valve
6.16 Foot Valve
6.17 Flexible Connections
6.18 Automatic Air Vent
6.19 Pressure Gauge
6.20 N R V (Non-Return Valve)

### Chapter 4: Fittings and Fixtures

4.1 Plumbing Fixture
4.2 Bathroom & toilet fixtures
4.3 Water closet
4.4 Bath tub
4.5 Shower tray
4.6 Bidet
4.7 Floor drain
4.8 Urinals
4.9 Flush tank
4.1 Flush valves
4.2 Kitchen sink
4.3 Dish washer

### Chapter 7: Piping Materials.

7.1 Various Piping Materials
7.2 Properties of Piping Materials
7.3 Metallic Pipes
7.4 Non-Metallic Pipes

### Chapter 8: Pump Capacity Calculations

8.1 Introduction to Pumps
8.2 Types of Pumps
8.3 Pump Selection criteria
8.4 Pump Head loss Calculation
8.5 Pump Capacity calculation
8.6 Booster pump Capacity calculation

## MODULE 4: Sanitary and Drainage System

### Chapter 9: Introduction to Drainage System

9.1 Over view
9.2 Drainage Piping Material

### Chapter 10: Drainage System Equipment's

10.1 Working of grease interceptor
10.2Working of Oil Interceptor
10.3 Sewage Ejector Working
10.4 Septic Tank Working

### Chapter11: Drainage Piping& Accessories

11.1 Drainage Pipe Sizing
11.2 Drainage pipe traps
11.3 Drainage Fittings
11.4 Manhole Sizing

## MODULE 5: Plumbing Systems

**Chapter 12:** Garden Water Sprinkler System
**Chapter 13:** Swimming Pool
**Chapter 14:** Water Fountain
**Chapter 15:** Solar Water Heating System

## MODULE 6: Piping Layout Drafting

### Chapter 16: Schematic Drawings preparation

16.1 Studying Layout
16.2Symbols and Legends
16.3 Drawing SLD
16.4 Elevation Drawings
16.5 Preparation of shop drawings

## MODULE 7: Project Documents

18.1 Preparing Master BOQ or Estimation Quotation for the project.
18.2 Preparing Material Procurement List.

DIPLOMA IN MEP ENGINEERING SUBJECTS WILL VARY

BRITISH ENGINEERING INSTITUTE
JP JACOBS
INTERNATIONAL RESEARCH FOUNDATION UK

# POST GRADUATE DIPLOMA IN HVAC ENGINEERING

## MODULE 1: Introduction to HVAC

### Chapter 1: Basics of HVAC

1.1 What is HVAC
1.2 What is Heat?
1.3 Forms of Heat
1.4 Modes of Heat Transfer
1.5 Factors to be controlled for HVAC system
1.6 What is TR?
1.7 Associations, codes and Standards in HVAC Industry.

### Chapter 2: Psychometrics

2.1 What is Air?
2.2 What is Psychrometry?
2.3 Properties of Psychrometry
2.4 Study of Psychrometry Chart.
2.5 Air Conditioning Processes.

### Chapter 3: Basic Refrigeration Cycle

3.1 Components of Basic Refrigeration Cycle
3.2 Working of Basic Refrigeration Cycle
3.3 Auxiliary components of Refrigeration Cycle
3.4 Experiencing refrigeration Cycle in Split AC, Window AC and Refrigerator.
3.5 What is Refrigerant?
3.6 What are Brines?
3.7 Properties of Ideal Refrigerants.
3.8 Commonly Used Refrigerants and Brines.

### Chapter 4: Classification of Components of Refrigeration Cycle

4.1 Classification of Compressors.
4.2 Classification of Condensers.
4.1 Classification of Expansion Devices.
4.2 Classification of Evaporators.

### Chapter 5: Classification of Air Conditioning System

5.1 Classification based on Type of Refrigeration System.
5.2 Classification on Duct ability of the System.
5.3 Working and Installation of Various Air Conditioning Systems.
5.4 Parameters for Selection of Machine.
5.5 Design and Working of Centralized Air Conditioning Systems.
5.6 Parameters to be considered for Central AC.

## MODULE 2: Air Distribution System

### Chapter 1: Load Calculations

1.1 Why Heat Load Calculations Required
1.2 Categorizing Heat loads based on their process of transfer and Heat Form.
1.3 Parameters for Cooling and Dehumidification Loads.
1.4 Considering U value for Materials.
1.5 Considering Equivalent Temperature Differences for Materials.
1.6 Difference between Radiant Energy and Transmission Heat.
1.7 Concept of Infiltration, Exfiltration and outside Air.
1.8 Calculating Grand Total Heat. 1.9 Calculating Ton of Refrigeration
1.10 Calculating Dehumidified CFM.
1.11 Finding Heat Load Calculation Using E20 Form.
1.12 Basic HAP Explanation.
1.13 Applying Heat loads to a project.
1.14 What are thumb rules for Load Calculation?
1.15 Can we really use thumb rules in projects?

### Chapter 2: Designing of Duct Network

2.1 Space Notation
2.2 Types of Ducts
2.3 Shapes of Ducts
2.4 Material used for Ducts.
2.5 Insulation Materials for Ducts.
2.6 Air Terminals Classification and Selection
2.1 Locating Air Terminals
2.2 How to Draw Single Line Diagram (SLD)
2.3 Factors need to consider while Drawing SLD.
2.4 Methods for Duct Sizing
2.5 Duct sizing using Manual Ductulator.
2.6 Duct Sizing using Software.
2.7 Converting SLD to DLD (Double Line Diagram)
2.8 Ducting drawing Methods for DLD.
2.9 Duct Fittings.
2.10 Drawing DLD using fittings.
2.11 Discussion on Ducts Joining techniques.
2.12 Classification of Dampers.
2.13 Locating Dampers.
2.14 Ducting Supports

### Chapter 3: Static Pressure Calculation

3.1 What is Statics Pressure.
3.2 Need of Calculating Static Pressure.
3.3 Calculating Fan Capacity.
3.4 Types of Fans
3.5 Fan Selection Parameters.

### Chapter 4: Designing of VRV/VRF System.

4.1 What is VRV / VRF System.
4.2 Advantages of VRF over conventional Air Conditioning Systems.
4.3 Components of VRF System.
4.4 Difference between Heat Pump and Heat Recovery System.
4.5 Selection of Indoor Unit.
4.6 Selection of Outdoor Unit.
4.7 Difference between 2 pipe and 3 Pipe System.
4.8 Applying VRF system for project.

### Chapter 5: Project Documents.

5.1 How to prepare Base of Design.
5.2 Preparing Building Information Sheet.
5.3 Making Ducting Bill of Quantity
5.4 Preparing Scope of Work.

DIPLOMA IN MEP ENGINEERING SUBJECTS WILL VARY

# POST GRADUATE DIPLOMA IN HVAC ENGINEERING

BRITISH ENGINEERING INSTITUTE
JP JACOBS
INTERNATIONAL RESEARCH FOUNDATION UK

## MODULE 3: Hydronic System

### Chapter 1: Basics of Hydronic System.

1.1 What is Hydronic System.
1.2 What is open System and closed system.
1.3 Materials used for Piping.
1.4 Insulation Materials.
1.5 Pipe Fittings.

### Chapter 3: Project Documents.

3.1 Preparing piping Scope of Work
3.2 Preparing Piping BOQ.

### Chapter 2: Designing of Hydronic System

2.1 Pipe routing
2.2 Pipe Sizing
2.3 Calculating GPM from TR.
2.4 Pipe fittings
2.5 Symbols used for Drafting.
2.6 Pipe Supports
2.7 Head Loss Calculations
2.8 Pump Capacity Calculations.

## MODULE 4: Ventilation System

### Chapter 1: Introduction to Ventilation

1.1 Definition of Ventilation
1.2 Types of Ventilation
1.3 Designing Toilet Ventilation System.
1.4 Fan Capacity calculation for Ventilation
1.5 Selection of Fan.
1.6 Ducted and Non-Ducted Car Parking Ventilation
1.7 Fresh Air Quantity Calculation
1.8 Fresh Air Fan Selection

### Chapter 2: Kitchen Ventilation

2.1 Types of Kitchen Ventilation System
2.2 Types of Hoods.
2.3 Calculation of Exhaust Air and Fresh Air

### Chapter 3: Staircase Pressurization

4.1 Concept of Stair Case Pressurization
4.2 Calculation of Stair Case Pressurization

## MODULE 5: Project Documents

5.1 Preparing Ducting BOQ
5.2 Preparing Piping BOQ
5.3 Preparing Master BOQ or Estimation Quotation for the project.
5.4 Preparing Material Procurement List.
5.5 Preparation of Testing and Commissioning Reports.

DIPLOMA IN MEP ENGINEERING SUBJECTS WILL VARY

# Master Of Management In MEP Engineering

Duration - One Year (236 Hours)

BRITISH ENGINEERING INSTITUTE
JP JACOBS
INTERNATIONAL RESEARCH FOUNDATION UK

Working in area of 85422 - Post-graduate level Higher Education

## HVAC

| Sl No. | SYLLABUS | HOURS | DAY |
|---|---|---|---|
| | Chilled Water Pipe Sizing — McQuay Pipe Sizing Software. | | DAY-18 |
| | Common Header Pipe sizing. | | |
| 8 | Car Parking Ventilation | 2 | DAY-19 |
| 8.1 | Kitchen Ventilation — Hood Designing. | 2 | DAY-20 |
| 8.2 | Stair Well Pressurization System Designing. | 4 | DAY-21 |
| 8.3 | Estimation & Costing. | | |
| 8.4 | District Cooling System. | | |
| 8.5 | Green in HVAC System Designing — Energy Modeling . | | DAY-22 |
| 9 | VRV System designing, VRV Pipe Sizing using 'Toshiba VRV' software. | | |
| 10 | Cooling Without Air-Conditioning system & Passive Cooling system designing. | 2 | DAY-23 |
| | BMS | | |
| | Room Management System | | |
| 11 | VAV,HEX,2 way valve & 3 way valve operation | 2 | DAY-24 |
| | Energy Conservation Measures: | | |
| | Under floor Cooling | | |
| | Geothermal Cooling | | |
| | Thermal cooling or Ice on Pipe system | | |
| | HRW - Heat Recovery wheel | | |
| | EAT - Earth Air Tunnel system. | | |
| 12 | Green building design HVAC point of view | 2 | DAY-25 |
| 12.1 | Energy Efficient system( using phase changing material ) | | |
| 13 | Marine HVAC | 2 | DAY-26 |
| 13.1 | HVAC in Oil & gas | | |
| 13.2 | HVAC design for Data centre s | | |
| 14 | Pre-Commissioning and Commissioning Process | 2 | DAY-27 |
| | **Total hours** | **54** | |

## JP JACOBS INTERNATIONAL RESEARCH FOUNDATION UNITED KINGDOM

Working in area of 85422 - Post-graduate level Higher Education

BRITISH ENGINEERING INSTITUTE
JP JACOBS
INTERNATIONAL RESEARCH FOUNDATION UK

# Master Of Management In MEP Engineering

## Duration - One Year (236 Hours)

Working in area of 85422 - Post-graduate level Higher Education

### HVAC

| Sl No. | SYLLABUS | HOURS | DAY |
|---|---|---|---|
| 1 | Introduction to HVAC Systems | 2 | DAY-01 |
| 1.1 | DBT, WBT, RH, Sensible Heat, Latent Heat, Dew point | 2 | DAY-02 |
| 1.2 | Temperature, Humidity Ratio etc. Psychometric Chart | | |
| | Ventilation, Infiltration [ACH ]. , VCS | | |
| 2 | Equipments Selection — Package Ac, Chiller, AHU, FCU etc . | 4 | DAY-03 |
| | Vapour Absorption Machine [VAM] System. | | |
| | Winter Load Calculation, Heater, Radiator, Convector & Boiler | | |
| | selection. | | DAY-04 |
| 3 | Refrigerant Pipe Sizing — DX System. | 2 | DAY-05 |
| | De-Humidifier Selection. | | |
| | Exhaust Fan Selection — Performance curve, Desert Cooler | | |
| | Selection. | | |
| 4 | ASHRAE 62.1, ASHRAE 90.1 & SMACNA Standards. | 4 | DAY-06 |
| | Coil Selection - Software. | | |
| | Expansion Tank Selection - | | DAY-07 |
| | Cooling Tower Selection — Evaporative Losses calculation. | | |
| 5 | Heat load Calculation (Manually by E-20 and General) | 6 | DAY-08 |
| | | | DAY-09 |
| | | | DAY-10 |
| 5.1 | Software programs like: Carrier - HAP (Hourly Analysis | | |
| | Program), General. | 2 | DAY-11 |
| 6 | Types of Duct, Selection of Materials of Duct, Classification of | | |
| | Ducts [Low, Medium & High Pressure], Duct Gauge | | |
| | Selection, Comparison between Different Shapes of Duct, | | |
| | Duct Fabrication Procedure. | 4 | DAY-12 |
| | | | DAY-13 |
| 6.1 | Duct Designing using: | 4 | DAY-14 |
| | formulae [Static Regain, Equal Friction using Ductulators and | | |
| | using software programs (DUCTO/ McQuay/ Duct Checker). | | |
| 6.2 | Air terminal selection. | | DAY-15 |
| 6.3 | E.S.P [External Static Pressure] Calculation for Blower | | |
| | Selection. | 2 | DAY-16 |
| 6.4 | Fan & Pump Laws. Open Loop & Closed Loop System. | | |
| 7 | Hydraulic Calculation for Chilled water Pump Selection. | 4 | DAY-17 |
| | Primary, Secondary Pump Selection, Pumps in Series | | |
| | &Parallel . | | |

BRITISH ENGINEERING INSTITUTE
JP JACOBS
INTERNATIONAL RESEARCH FOUNDATION UK

# Master of MEP Engineering And Project Management

Duration- Two Year (472 Hours)

| SI No. | SYLLABUS | HOURS | DAY |
|---|---|---|---|
| | Chilled Water Pipe Sizing – McQuay Pipe Sizing Software. Common Header Pipe sizing. | | DAY-18 |
| 8 | Car Parking Ventilation | 2 | DAY-19 |
| 8.1 | Kitchen Ventilation – Hood Designing. | 2 | DAY-20 |
| 8.2 | Stair Well Pressurization System Designing. | 4 | DAY-21 |
| 8.3 | Estimation & Costing. | | |
| 8.4 | District Cooling System. | | |
| 8.5 | Green in HVAC System Designing – Energy Modeling . | | DAY-22 |
| 9 | VRV System designing, VRV Pipe Sizing using 'Toshiba VRV' software. | | |
| 10 | Cooling Without Air-Conditioning system & Passive Cooling system designing. BMS Room Management System | 2 | DAY-23 |
| 11 | VAV,HEX,2 way valve & 3 way valve operation | 2 | DAY-24 |
| | Energy Conservation Measures: Under floor Cooling Geothermal Cooling Thermal cooling or Ice on Pipe system HRW - Heat Recovery wheel EAT - Earth Air Tunnel system. | | |
| 12 | Green building design HVAC point of view | 2 | DAY-25 |
| 12.1 | Energy Efficient system( using phase changing material ) | | |
| 13 | Marine HVAC | 2 | DAY-26 |
| 13.1 | HVAC in Oil & gas | | |
| 13.2 | HVAC design for Data centre s | | |
| 14 | Pre-Commissioning and Commissioning Process | 2 | DAY-27 |
| | **Total hours** | **34** | |

## JP JACOBS INTERNATIONAL RESEARCH FOUNDATION UNITED KINGDOM

Working in area of 85422 - Post-graduate level Higher Education

# Master of MEP Engineering And Project Management

Duration- Two Year (472 Hours)

BRITISH ENGINEERING INSTITUTE
JP JACOBS
INTERNATIONAL RESEARCH FOUNDATION UK

Working in area of 85422 - Post-graduate level Higher Education

## HVAC

| Sl No. | SYLLABUS | HOURS | DAY |
|---|---|---|---|
| 1 | Introduction to HVAC Systems, | 2 | DAY-01 |
| 1.1 | DBT, WBT, RH, Sensible Heat, Latent Heat, Dew point | 2 | DAY-02 |
| 1.2 | Temperature, Humidity Ratio etc. Psychometric Chart Ventilation, Infiltration [ACH ]. , VCS | | |
| 2 | Equipments Selection — Package Ac, Chiller, AHU, FCU etc . Vapour Absorption Machine [VAM] System. | 4 | DAY-03 |
| | Winter Load Calculation, Heater, Radiator, Convector & Boiler selection. | | DAY-04 |
| 3 | Refrigerant Pipe Sizing — DX System. De-Humidifier Selection.Exhaust Fan Selection — Performance curve, Desert Cooler Selection. | 2 | DAY-05 |
| 4 | ASHRAE 62.1, ASHRAE 90.1 & SMACNA Standards. Coil Selection - Software. | 4 | DAY-06 |
| | Expansion Tank Selection - | | DAY-07 |
| | Cooling Tower Selection — Evaporative Losses calculation. | | |
| 5 | Heat load Calculation (Manually by E-20 and General) | 6 | DAY-08 |
| | | | DAY-09 |
| | | | DAY-10 |
| 5.1 | Software programs like: Carrier - HAP (Hourly Analysis Program), General. | 2 | DAY-11 |
| 6 | Types of Duct, Selection of Materials of Duct, Classification of Ducts [Low, Medium & High Pressure], Duct Gauge Selection, Comparison between Different Shapes of Duct, Duct Fabrication Procedure. | 4 | DAY-12 |
| | | | DAY-13 |
| 6.1 | Duct Designing using: formulae [Static Regain, Equal Friction using Ductulators and using software programs (DUCTO/ McQuay/ Duct Checker). | 4 | DAY-14 |
| 6.2 | Air terminal selection. | | DAY-15 |
| 6.3 | E.S.P [External Static Pressure] Calculation for Blower Selection. | 2 | DAY-16 |
| 6.4 | Fan & Pump Laws. Open Loop & Closed Loop System. | | |
| 7 | Hydraulic Calculation for Chilled water Pump Selection. Primary, Secondary Pump Selection, Pumps in Series & Parallel . | 4 | DAY-17 |

BRITISH ENGINEERING INSTITUTE
JP JACOBS
INTERNATIONAL RESEARCH FOUNDATION UK

# FIRE FIGHTING

Working in area of 85422 - Post-graduate level Higher Education

## FIRE FIGHTING

| Sl No. | SYLLABUS | HOURS | DAY |
|---|---|---|---|
| III | UNIT.3 DESIGN OF FIRE SAFETY SERVICES | | |
| | A Fire Protection System | | |
| 1 | Sprinklers — Types, Selection, Designing, Pipe sizing. | 6 | DAY-78 |
| | Fire Hose Cabinets & Fire Hydrants Selection. | | DAY-79 |
| | Fire Fighting Hydraulic Calculation, Head Loss & Pump head | | |
| | Calculations for High Rise Buildings | | DAY-80 |
| 2 | Fire Water Pump — [Main Pump, Jockey Pump & Diesel Pump] | | |
| | Classification, Types & Selection. | 4 | DAY-81 |
| | NFPA, NBC & FSAI Codes for Fire Fighting System Designing. | | |
| | FM200 System Designing — [Water Less Fire Protection system] | | |
| | Capacity, Pipe Sizing, Nozzle selection. | | DAY-82 |
| 3 | Exit Signs. Definition, Design and Installation | 2 | DAY-83 |
| | B Smoke Control System | | |
| 1 | Definition, Design, Installation, Inspection & Maintenance | 2 | DAY-84 |
| 2 | Stair well pressurization System. | 2 | DAY-85 |
| | C Emergency Evacuation System | | |
| 1 | Definition, Design, Installation, Inspection and Maintenance | 2 | DAY-86 |
| | D Fire Detection & Alarm System | | |
| 1 | Definition, Design, Installation, Inspection & Maintenance | 2 | DAY-87 |
| 2 | Smoke Detector (Ionization Type, Optical). | 2 | DAY-88 |
| | Heat Detector, Linear Heat Detection Cable. | | |
| | Flame Detector. | | |
| | VESDA - Aspirating System. | | |
| | F Fire Safety During Construction | 2 | DAY-89 |
| | G Risk Assessment Methodologies | | |
| | H LPG Code of Practice | | |
| | I Emergency Action Plan | | |
| | **Total hours** | **34** | |

**JP JACOBS INTERNATIONAL RESEARCH FOUNDATION UNITED KINGDOM**

Working in area of 85422 - Post-graduate level Higher Education

# PLUMBING

BRITISH ENGINEERING INSTITUTE
JP JACOBS
INTERNATIONAL RESEARCH FOUNDATION UK

Working in area of 85422 - Post-graduate level Higher Education

## PLUMBING

| Sl No. | SYLLABUS | HOURS | DAY |
|---|---|---|---|
| 1 | Introduction to plumbing system — International codes and standards | 2 | DAY-53 |
| | Introduction to pipes, fittings, valves & pumps used in plumbing system. | 4 | DAY-54 |
| | Introduction to plumbing tools | | DAY-55 |
| 2 | Common Sanitary Fixtures Details : Standard trap pipe & discharge pipe sizes, Standard slopes for the discharge pipes : | | |
| | (a) Wash basin, (b) Water closet (c) Showers | | DAY-56 |
| | (d) Sinks (e) Bath tubs (f) Bidets (g) Urinals | | DAY-57 |
| | (h) Floor drains (i) Grease/oil trap Trap | | DAY-58 |
| | (j)Gully trap (k) Manholes 6 | | |
| 3 | Formula for flow through pipes : | 2 | DAY-59 |
| | (a) Darcy formula | | |
| | (b) Chezys formula | | |
| | (c) Manning formula | | |
| | (d) Hazen formula | | |
| | (e) Reynolds Number (Laminar / Turbulent Flow) | | |
| | Practical problems | | |
| 4 | Lay out of drainage system in toilets with schematics (cad drawing ) | 2 | DAY-60 |
| 5 | Lay out of rain water piping in building with schematics (cad drawing ) | 2 | DAY-61 |
| 2 | Water supply in building : | 2 | DAY-62 |
| | (a) Direct system | | |
| | (b) Pumped system. | | |
| | Ground level (or) underground reservoir sizing. | | |
| | Elevated roof tank (Storage cistern) sizing. | | |
| | Pump selection (HP, Watts). | | |
| | Water pipe sizing in Buildings, | | |
| | Pressure Tank Sizing | | |
| | Cad drawing | | |
| 3 | Maximum number of discharge units allowed in stack, Single stack system, Design of horizontal drains by discharge units method. | | |
| 4 | Septic tank, Soak away pits, Dispersion trenches designing. | 2 | DAY-63 |

# PLUMBING

BRITISH ENGINEERING INSTITUTE
JP JACOBS
INTERNATIONAL RESEARCH FOUNDATION UK

Working in area of 85422 - Post-graduate level Higher Education

## PLUMBING

| Sl No. | SYLLABUS | HOURS | DAY |
|---|---|---|---|
| 5 | Hot Water Generation Methods- Boiler, Steam Generation, Calorifier Centralized hot water system cad modelling | 2 | DAY-64 |
| 7 | Pump head calculation —Open loop and closed loop system. | 2 | DAY-65 |
| 8 | Irrigation system design-Basics | | |
| 9 | Sewage treatment plant design —Basics | | DAY-66 |
| 10 | Water treatment plant design —Basics | | |
| 11 | Swimming pool & water fountain design —Basics | | DAY-67 |
| 13 | Gas piping system design basics - LPG, Medical gas | | DAY-68 |
| 14 | Practical layout preparation & Discussion — Cad standard | 2 | DAY-69 |
| 15 | Estimation of Plumbing system | 2 | DAY-70 |
| 16 | Installation, testing & commissioning of plumbing system —QA/QC | 2 | DAY-71 |
| 17 | Maintenance of plumbing system | 2 | DAY-72 |
| | **Total hours** | **40** | |

**JP JACOBS INTERNATIONAL RESEARCH FOUNDATION UNITED KINGDOM**

Working in area of 85422 - Post-graduate level Higher Education

# JP JACOBS ASSOCIATES

## JP JACOBS INTERNATIONAL RESEARCH FOUNDATION

### INDIA

39/2475-B1, Suite#196, LR Tower,
SJRRA 104, S Janatha Road,
Palarivattom, Kochi, Kerala 682025

+919544644599

## JP JACOBS INTERNATIONAL RESEARCH FOUNDATION

### USA

30 N Gould St, STE 4000
Sheridan, WY 82801 , USA

+1(845) 363-7564

## JP JACOBS INTERNATIONAL PRIVATE LIMITED INDIA

39/2475-B1, Suite#178, LR Tower,
SJRRA 104, S Janatha Road,
Palarivattom, Kochi, Kerala 682025

+97431523999 (QATAR)

## JP JACOBS INTERNATIONAL UNIVERSITY USA

19 Holly Cove Ln
Dover, DE 19901, USA

+1(845) 363-7564

## JP JACOBS INTERNATIONAL ENGINEERING UK LTD

Kemp House, 160 City Road
London, EC1V 2NX
United Kingdom

+44 7310 028064

## JP JACOBS INTERNATIONAL RESEARCH FOUNDATION

### UK

Kemp House, 160 City Road
London, EC1V 2NX
United Kingdom

+44 7310 028064

## OUR ACCREDITATION

UNITED STATES GREEN BUILDING COUNCIL

ISO 9001 2015

ENGINEERING COUNCIL OF INDIA

MSME GOVERNMENT OF INDIA REGISTERED

INDIAN SOCIETY OF MECHANICAL ENGINEERS AFFILIATED

CALIFORNIA UNIVERSITY

AMERICAN COUNCIL OF TECHNICAL EDUCATION

THE CPD CERTIFICATION SERVICE