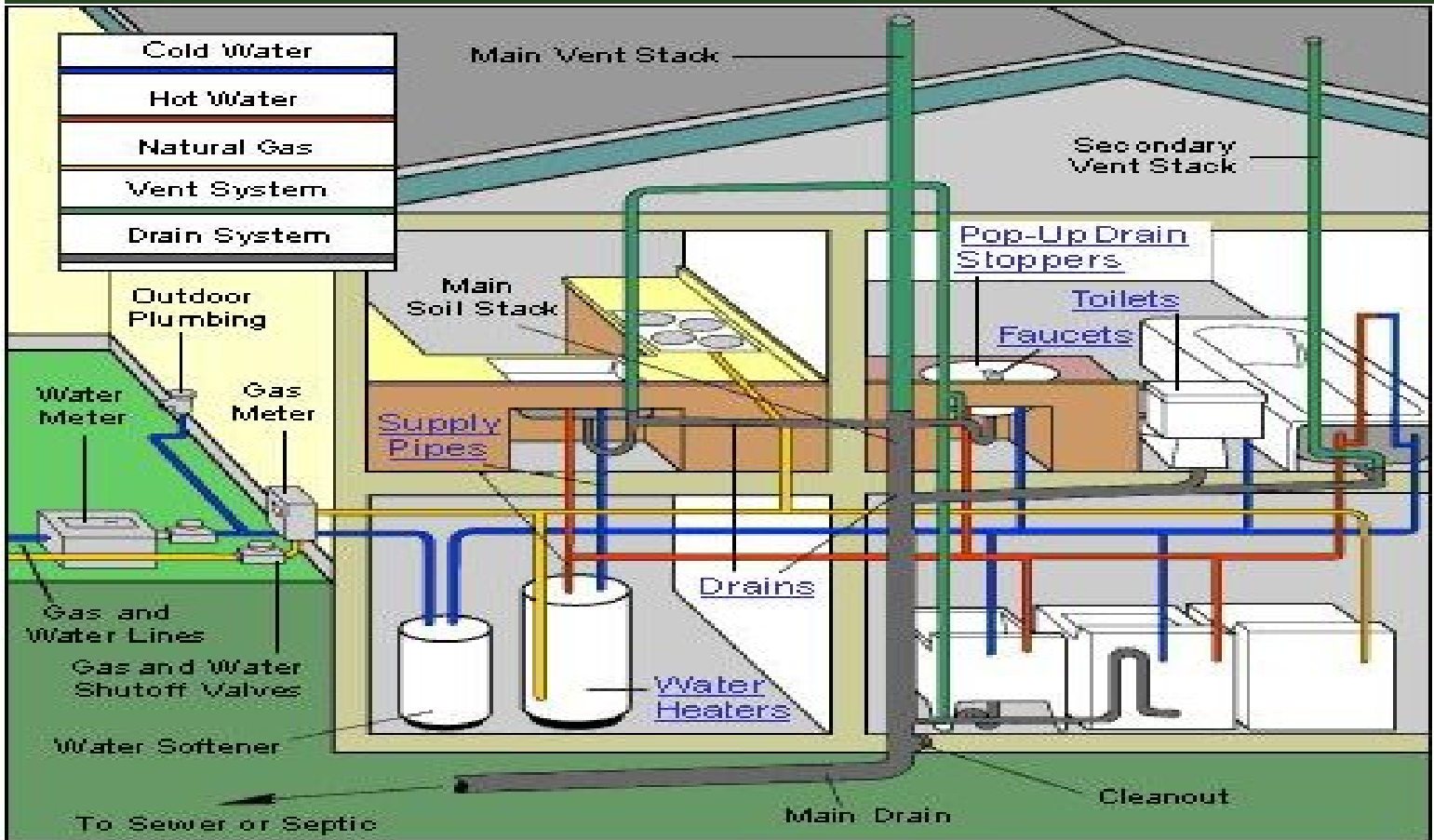


# Plumbing Design & Drafting per IPC



Course Date & Venue: 06<sup>th</sup> Aug – 11<sup>th</sup> Aug 2018 - Hyderabad, INDIA.

Duration: 06 Days



## PROGRAM OVERVIEW

Plumbing Design & Drafting per IPC

This is a fast-paced program designed to present all major topics relative to the Plumbing Systems Design & Drafting per IPC.

This program consisting of concept theory, problem solving, design, detailed engineering & drafting along with a project.

### WHO SHOULD ATTEND

This course is applicable to mechanical and HVAC engineers, process engineers, architects, building designers, contractors, energy auditors, facility managers who are involved in the design and installation of plumbing systems.

### WHAT YOU WILL LEARN

Upon completion of this course the participant will be able to

This course provides basic design criteria pertinent to the design of Plumbing, Sanitary systems. This course identifies and outlines the types of drainage systems (sanitary and storm water), supply water distribution systems, hot water systems, appropriate for your needs, together with the wise system design & energy conservation.

Gain an understanding of the basic principles and code requirements of typical plumbing systems and the ability to design and review plumbing systems. Know how to use calculations in the selection of piping materials and the methods of construction, sizing of piping and equipment, and plumbing fixture selection. Be well prepared to meet the design challenges of the varying types of commercial and institutional projects anticipated in the next decade.

### MAJOR COURSE MODULES

#### 1) Plumbing Systems

- Introduction
- Piping Systems
- Water Supply – Cold & Potable Water Systems
- Hot Water Supply System
- Hydraulics and Pumping Systems
- Sanitary Drainage System
- Storm Water Management

“Numerous tips & tricks throughout the course make it very practical to your learning approach.”

“The most extensive training topics & course material as per the current codes & standards which covers all Design & Detailing, Maintenance Standards of Plumbing Systems.”

“Experience the working atmosphere in the class itself during Project work.”

### Trainer Synopsis

“Faculty with over a decade of USA Experience”

“Practising MEP Consultant for India / Gulf Projects”

### Training Features:

- Individual Attention.
- Hundreds of Students working in India & Middle East.
- Excellent Training Material provided including ( Training Manual, Design Data Charts, Drawings & Design of Sample Projects )

## DETAILED COURSE DESCRIPTION

### Plumbing Systems Design

#### Module – 1) Introduction

- Introduction, History, Scope, Objective, Building Services
- Plumbing Codes & Standards -UPC, SPC, NPC, BOCA & IPC
- Plumbing Scope in a building
- Role of Plumbing Practitioners
- Plumbing Fixtures & Appliances – Definitions, Symbols, Supply
- Installation & Fixture Clearances
- Water Closet, Lavatory, Bath Tub, Shower Head, Bidet, Urinal
- Floor Drain, Kitchen Sink, Dish Washer, Waste Food Grinder
- Drinking Fountain, Laundry Tray, Hose Bib
- Flushing Systems
- Water Consumption

#### Module – 2) Piping Systems

- Fundamentals-Pipe, Tube
- Pipe Designators – NPS, IPS, NB
- Pipe Wall Thickness, Schedule, Pipe Weight, Lengths, Grades, Ends
- Connections in Piping System
- Pipe Joining Methods (Threaded, Socket-Weld, Butt-Weld, Flanged)
- Pipe Fittings – Elbows (90° - Long Radius, Short Radius, 45° Bends, Reducing, Mitre)
- Tee – Equal, Reducing
- Fabricated – Stub-In, Stub-On
- Reducers – Concentric, Eccentric, FOT, FOB
- Couplings, Unions, Plug, Swage
- Flanges, Configurations, Types
- Valves – Introduction, Functions, Components, Locations
- Gate, Globe, Butterfly, Ball, Angle, Check, PRV, Drain, Air Vent, Control Valves
- Valve Operators, Valve Layout Considerations

#### Module – 3) Water Supply – Cold & Potable Water Systems

- Introduction, Water, Sources of Water Supply, Requirements
- Estimating the Total Demand for Water Supply System
- Water Meter, Types, Sizing, Pressure Drop
- Water Supply Systems in Buildings – Direct, Over-Head Tank
- Underground-Overhead, Direct Pumping Systems
- Water Distribution System in Building-Up-Feed, Down-Feed
- Types, Sizing Underground & Overhead Tank
- Booster Pump Requirement
- Estimation of Number of Plumbing Fixtures
- Fixture Units/Demand Units/Loading Units
- Estimation of Fixture Units, Simultaneous Demand
- Hunter Curves, Max. Probable Flow
- Sizing Water Supply Piping - Pressure Drop & Velocity Limitation
- Pressure Needed in Different Fixtures
- Excessive Water Pressure, Water Hammer

## DETAILED COURSE DESCRIPTION (contd)

### Module – 4) Hot Water Supply System

- Introduction, Hot Water Requirement
- Hot Water Temperature for Various Services
- Components of Hot Water Supply System
- Water Heaters, Types, Storage Tanks
- Hot Water Distribution Piping System
- Individual Geysers
- Centralized Hot-Water Systems
- Hot Water Circulation Systems – Up-Feed, Down-Feed, Combined, Inverted
- Design – Average Hot Water Demand
- Water Heater Coil Capacity, Storage Tank Capacity

### Module - 5) Hydraulics and Pumping Systems

- Introduction, Density, Viscosity
- Pressure-Vapor, Atmospheric, Absolute and Gauge
- Static Head, Dynamic Head
- Flow under Gravity Conditions – Pipes
- Open Channels, Flow under Pressure
- Coefficient of Roughness, Frictional Loss, Nomograph
- Need for Pumping
- Pump Types – Centrifugal, Rotary, Positive Reciprocating
- Pump Application – Booster, Circulation, Submersible, Sewage and Sump Pump
- Pumping Systems – Direct Boosting, Break-Pressure Tank, Hydro-Pneumatic
- Pump Characteristics – Capacity, Total Dynamic Head, Efficiency, Power Required
- Suction, Cavitation, Net Positive Suction Head

### Module – 6) Sanitary Drainage System

- Introduction, Waste Water-Black Water, Gray Water
- Planning Layouts, Pipes, Fittings
- Grouping of Drainage System-Above Ground, Basement, In Ground
- Parts -Traps, Vents, Drainage Pipe, Building Drain Pipe, Sewer
- System Types – One-pipe, Two-pipe, Single Stack, Soil Stack, Waste Stack
- Drainage Fixture Units, Estimation
- Sizing-Horizontal Fixture Branches, Stacks
- Branch Intervals, Maximum Capacities, Grading(sloping) of Horizontal Pipes
- Vent System, Role of Atmospheric Pressure
- Types – Wet, Waste Stack, Back-Back, Circuit, Loop, Individual Vent
- Sizing and Length
- Sewage Basin, Sewage Pump
- Types-Submersible, Vertical Lift, Self Priming, Simplex, Duplex
- Drawdown Capacity, Circular Basin Capacity, Basin Sizing
- Sewage Pump Head Calculations

### Module – 7) Storm Water Management

- Introduction, Collection, Catchment Areas
- Design Considerations- Rain Water Area, Amount of Rainfall
- Type of Roof System- Flat Roofs, Sloped Roofs
- Catchment Area, Roof Drains
- Screening, Gutters, Leader, Horizontal Storm Drain
- Sizing, Sloping, Connections

## SELECTED CLIENTS



## GENERAL INFORMATION:

- Class begins at 09:00 AM and ends at 05:30 PM. Participants are expected to be present each day and during all training periods. Participants who do not fulfill the attendance requirement will not be certified. Please remember this when making your travel arrangements.
- Participant fee includes printed course material (containing all slides and presentation handouts), course participation certificate.
- Accommodation can be arranged for the participants near to the training venue (accommodation is not included in the participants fee).
- The training is restricted to registered participants only, visitors are not permitted.
- Course attendance certificate will be issued to all participants.
- Use of mobile phones, Personal Data Assistants (PDA, Blackberry) and pagers is not permitted during workshop training periods. Same applies for use of laptop, tablet, and computer for any purpose (E-mail, games etc.) other than workshop training.
- The recommended attire is business casual.
- Participants are expected to maintain a professional standard of appearance and behavior. Any participant wearing inappropriate attire or behaving in an unprofessional manner will be given a verbal warning. Further incidents may result in the participant being asked to leave the class without refunding their fee.
- Failure to meet or comply with these requirements will result in non-certification.

## WHY TRAIN WITH IPEBS

IPEBS team develops the training programs based on the practical consulting and site construction expertise that has been built up over the years in various specialist areas.

We set out to teach top-quality engineering skills training courses and we have achieved this—we constantly strive to make them as good as it's possible to – but over the years we have also refined our methods, adding several enhancements to the construction stages of course description, design of the courses and assessment.

We believe that these are important to our training participants; it's easy to see what the courses consist of, what value they will gain from attending them and how they can apply their new knowledge and skills in their workplace in a structured, evidence-rich way.

## INSTRUCTOR PROFILE

- ❖ MEP Engineer from USA.
- ❖ Over 16 years of experience in MEP Services including Design, Installation & Maintenance.
- ❖ Plumbing/Fire Protection systems specialist.
- ❖ Handled projects based in USA, Middle East & India.
- ❖ Worked on different projects including Industrial Plants, 5 Star Hotels, Palaces, Shopping Malls, Residential & Commercial Buildings.
- ❖ Expertise includes Plumbing & Fire Fighting Design for Building Services as per IPC, UPC, BS & NFPA Codes and MEP Coordination Services.
- ❖ Practicing MEP Consultant for Gulf & Indian Building Services Projects.
- ❖ Successfully trained more than Five Hundred Mechanical Engineers.
- ❖ Over 4 years of Quality Training Experience in Plumbing & Fire Protection Engineering Courses.
- ❖ International & Corporate Course Speaker.

## PARTICIPANT FEES:

Plumbing Design & Drafting per IPC 6 - Days Workshop	Registration Fee	Group Discounts
Indian Participant	22,000/- INR	2 or more at 7% off 5 or more at 10% off
International Participant	400/- US \$	

Account Name: IPEBS Account No : 03182020005287

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Interested in Onsite training - save over 40% off in total fees, for further information on Onsite training please contact,  
E-mail : [corptrain@ipebs.in](mailto:corptrain@ipebs.in) Phone- +91-40- 30623249 Mobile- +91- 9885946711

## Terms & conditions:

**CANCELLATIONS & SUBSTITUTIONS:** Cancellations done 2 weeks prior to the course start date a full refund will be promptly made after a written cancellation is received. Cancellations done 1 week prior to the course start date a minimum charge of 50% of the total fee will be charged. No cancellations are accepted 6 Days before the course start date. However, credit maybe granted to a later workshop or you could send a substitute participant. After registration you may substitute a participant anytime.

**COURSE MATERIAL AGREEMENT:** It is the intention of IPEBS that the course text and materials supplied to participants at IPEBS courses are prepared and issued for the participants' sole use. Codes and standards constantly change and interpretations are issued by the publishing societies. Information contained in IPEBS course materials is based on the best available data obtained by IPEBS at the time of publication. IPEBS is in no way responsible for subsequent use regardless of intention.

**PROGRAM CHANGE POLICY:** Please note that instructors and topics were confirmed at the time of publishing this document; however, circumstances beyond the control of the workshop organizers may necessitate substitutions, alterations or cancellations of the instructors and/or topics. As such, IPEBS reserves the right to alter or modify the instructors and/or topics if necessary. Any substitutions or alterations will be updated on our web site.

**COURSE CANCELLATION BY IPEBS:** IPEBS reserves the right to cancel any WORKSHOP/course due to circumstances beyond our control. All tuition fees will be refunded in the event of cancellation. IPEBS liability is limited to only those tuition fees paid in advance.

**FORCE MAJEURE:** Except for the obligations to make money payments as outlined hereunder, neither party shall be responsible to the other for delay or failure to perform any of the terms and conditions, or other activities, of this agreement if such delay or failure is caused by strike, war, act of God, or force majeure.

## REGISTRATION FORM

Please visit [www.ipebs.in](http://www.ipebs.in) for details on courses we offer and more updated information.

You can register online.

**Or**

For applications by E-mail, please fill the form below and send to [info@ipebs.in](mailto:info@ipebs.in)

**COURSE TITLE: Plumbing Design & Drafting per IPC**

COURSE DATE: \_\_\_\_\_ COURSE LOCATION: \_\_\_\_\_

NAME: \_\_\_\_\_ NATIONALITY: \_\_\_\_\_

QUALIFICATION: \_\_\_\_\_ WORK EXPERIENCE (if any): \_\_\_\_\_

JOB TITLE: \_\_\_\_\_ COMPANY: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ POSTAL CODE: \_\_\_\_\_ COUNTRY: \_\_\_\_\_

PHONE: \_\_\_\_\_ FAX: \_\_\_\_\_ EMAIL: \_\_\_\_\_

In case of Emergency, contact

NAME: \_\_\_\_\_ PHONE: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

EMAIL: \_\_\_\_\_

NOTE: Training Fee can be paid at the time of Joining the Course.

I, acknowledge to the terms & conditions of the organizer.

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

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