2017
Instrumentation Design & Detailed Engineering

PROGRAM OUTLINE

IDE 101. Introduction to Oil & Gas Industry and EPC Contracts.

IDE 102. Fundamentals of Process Instrumentation

IDE 103. Control Valve Essentials and Capabilities

IDE 104. Process Control

IDE 105. Fundamentals of ESD, F & G & BPCS

IDE 106. Calibration, Installation and Maintenance of Instruments

IDE 107. Instrumentation Standards in Oil & Gas, E & I, Drawings and Documentation

IDE 108. Instrumentation Drawing, Documentation & Schematics
**SmartBrains** is the global market leader in providing high-level training services to the energy sector (Oil and Gas, Petrochemical, Refinery, LNG, Power Plants, Fiscal, Contracts, Strategy & Finance and Leadership & Management). Operating nation wise over the last 8 years, our courses are widely acknowledged within the energy community for quality and up-to-date information. Our success and distinguished reputation is down to our commitment to the industry, a high-level of expertise, sector knowledge, cultural diversity and experience that comes from organising

**SmartBrains** engineers and technologist Pvt. Ltd. has received recognition, endorsement and affiliation from National Skill Development Corporation of India (NSDC), a Public Private Partnership (PPP), Under the Ministry of Skill Development and Entrepreneurship (Govt. of India Enterprises) & various Skill Sector Councils as an authorized training partner under various trades. SmartBrains is authorized to provide skill based training for engineering/non-engineering candidates as per their interest. SmartBrains as a training institute will provide complete practical knowledge based skill training to the candidates and NSDC/Skill Councils will be responsible for providing

### Why SmartBrains

- **Highly qualified and experienced trainers**
  - Our team consists of highly qualified and experienced trainers with years of teaching, as well as hands-on and in-depth expertise in EPC industries

- **Technical Insight & Case Study**
  - Our courses combine technical knowledge and experience to make learning accessible and entertaining.

- **Convenient Place & High Quality Training Material**
  - Classroom & Training Material are excellent designed to create a positive learning environment

- **Training on latest designing and drafting softwares**
  - Our Courses combine latest engineering designing softwares, 3d modeling tools and 2D drafting softwares as well.

- **Online classes are available through VC**
  - You can attend our live training classes from your home or at your convenient place by Video conference
2017 TRAINING SCHEDULE

<table>
<thead>
<tr>
<th>Training Courses</th>
<th>Course Duration</th>
<th>Course Fee</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDE 101-</td>
<td>6 Hours</td>
<td>INR 1000/-</td>
<td>3rd June</td>
</tr>
<tr>
<td>IDE 102- Fundamentals of Process Instrumentation.</td>
<td>6 Hours</td>
<td>INR 3000/-</td>
<td>4th 5th June</td>
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<tr>
<td>IDE 103- Control Valve Essentials and Capabilities</td>
<td>6 Hours</td>
<td>INR 3000/-</td>
<td>6th June</td>
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<tr>
<td>IDE 104- Process Control</td>
<td>6 Hours</td>
<td>INR 3000/-</td>
<td>7th June</td>
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<tr>
<td>IDE 105- Fundamentals of ESD, F &amp; G &amp; BPCS</td>
<td>6 Hours</td>
<td>INR 4000/-</td>
<td>7th June</td>
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<tr>
<td>IDE 106- Calibration, Installation and Maintenance of Instruments</td>
<td>6 Hours</td>
<td>INR 4000/-</td>
<td>8th June</td>
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<tr>
<td>IDE 107- Instrumentation Standards in Oil &amp; Gas, E &amp; I, Drawings and Documentation</td>
<td>6 Hours</td>
<td>INR 4000/-</td>
<td>9th June</td>
</tr>
<tr>
<td>IDE 108- Instrumentation Drawing, Documentation &amp; Schematics</td>
<td>6 Hours</td>
<td>INR 10000/-</td>
<td>10th 11th June</td>
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</tbody>
</table>

Terms and Conditions:

1. All the Public Training will be held in SmartBrains Training Centers

2. Course fee excluding Tax.

3. Course fee including:
   - Tea Break
   - Training Kit (Pen, Note, etc)
   - A full set of the course Module
   - CD containing complete course slide
   - Certificate of Completion

4. SmartBrains reserves the right to cancel classes up to one week before scheduled date due to low registration.

5. Upon cancellation, SmartBrains will provide registrants a full refund for pre-paid course fees. Cancellation of courses does not imply responsibility for reimbursement to registrants for non refundable expanses.

- Please Note That We Offer:
  - Upto 15% Fee Discounts on all Modules Training
  - Upto 10% Fee Discounts on Early Bid
  - Upto 15% Fee Discounts on Group Registration

The all modules training discount will be apply only to participants who are registering for all 9 Modules

The early bird will apply only to sign up 7 days before the course commencing date.

The Group Registration Discount will apply on a group of minimum 3 participants
IDE-101  Introduction to Oil & Gas Industry and EPC Contracts

**COURSE OUTLINE**
- General Industry overview and basic concepts
- Oil & Gas prospecting (Exploration)
- Geological prospecting
- Geophysical prospecting
- Seismic (2D and 3D) acquisition
- Oil & Gas Production Facilities
- Overview of an EPC Contract
- Tender and Procurement Process
- The Scope of Works

June 2017
Saturday

IDE-102  Fundamentals of Process Instrumentation

**COURSE OUTLINE**
- Fundamentals of Process Instrumentation
  - Process Instrumentation
    - Process Measurements Concepts
    - Pressure Level
    - Temperature and Flow Overview
    - Pneumatic and Hydraulic Instrumentation Systems
- Pressure Measurement
  - Pressure Measurement Concepts
  - Pressure Measurement Devices
  - Pressure Transducers and load cells
  - Transmitters, Gauges, Indicators, Switches, Elements and Accessories.
  - Installation Considerations and Impact on the Overall Control Loop.

June 2017
Sunday

IDE-102  Fundamentals of Process Instrumentation

**COURSE OUTLINE**
- Level Measurement
  - Level Measurement Techniques
  - Different level measurement devices And Accessories
  - Temperature Measurement
    - Temperature Measurement Techniques
    - Different Temperature Measurement Devices and Accessories Protections
- Flow Measurement
  - Flow Measurement Techniques
  - Different Flow Measurement Devices and Accessories

June 2017
Monday

IDE-103  Control Valve Essentials and Capabilities

**COURSE OUTLINE**
- Control Valve Essentials and Capabilities
- Different Types of Control Valves and Their Characteristics
- Sizing of Control Valves, Actuation and Essential Accessories
- Use of Computer Programs for Valve Sizing
- Actuators, Positioners and Pneumatic Circuits
- Control Valve Material, Standards, Applications, Maintenance and Installation
- Types of Materials and Quality Standards for Different type of Valves

June 2017
Tuesday

June 2017
Wednesday

June 2017
Thursday

June 2017
Friday
### IDE-104, 105  Process Control, Fundamentals of ESD, F & G & BPCS

#### Course Outline

**Process Control Basics**
- Reasons for Process Control
- Stability, Algorithms and Cascade Control
- Action, Feed forward and the Effects of Dead Time
- Emergency Shutdown Logics (ESD)

**Fire & Gas (F & G)**
- Basic Process Control System (BPCS)
- Hazardous Areas
  - Classification of Hazardous Areas
  - Different Standards

#### Schedule

- **June 2017**
  - **Wednesday, June 7**: Process Control Basics
  - **Thursday, June 8**: Fire & Gas (F & G)
  - **Friday, June 9**: Basic Process Control System (BPCS)

### IDE-106  Calibration, Installation and Maintenance of Instruments

#### Course Outline

**Instrument Maintenance and Testing**
- Different Standards, Certifications, Marking and Approvals
- Calibration of instruments
- Instrument Performance
- Simulation
- Configuration, Rearrangement and Digital Timing of Digital Transmitters

**Maintenance Concepts**
- Electrical Concepts
  - Use of Multimeters and calibrators
  - Voltage, Current and Resistance Measurement
  - Open and Short Circuits
  - Isolation and Grounding/Earthing

**Electrical Concepts**

#### Schedule

- **June 2017**
  - **Wednesday, June 7**: Instrument Maintenance and Testing
  - **Thursday, June 8**: Maintenance Concepts
  - **Friday, June 9**: Electrical Concepts

### IDE-107  Instrumentation Standards in Oil & Gas, E & I, Drawings and Documentation

#### Course Outline

**Plant Documentation.**
- The Role Of Plant Documentation, Standards And Specifications.
- Drawing Types And Standards.
- Standards Organizations (isa, Iec, Iso).
- Understanding Diagram Layouts And Formats Cross References.

**Instrumentation Drawing, Documentation & Schematics**
- Iso 9002 And Document Control.
- Api Rp14f – Section 12.2 – Electronic Instrumentation.
- Isa Standards Library For Automation And Control.
- Specification Forms – Isa S20 – Specification Forms For Process Measurement

#### Schedule

- **June 2017**
  - **Wednesday, June 7**: Plant Documentation
  - **Thursday, June 8**: Instrumentation Standards in Oil & Gas, E & I
  - **Friday, June 9**: Instrumentation Drawing, Documentation & Schematics

### IDE-108  Instrumentation Drawing, Documentation & Schematics

#### Course Outline

**Instrumentation Documentation**
- Instrumentation Drawing/Layout
  - Type of layout & drawing management.
  - Piping & instrumentation diagram (P&ID)
  - Process flow diagram.
  - Logic diagram
  - Loop diagram
  - Control valve assembly.
  - Mounting layout (supports, anchors, sleepers & guides).

**Instrumentation Drawing/Layout**

#### Schedule

- **June 2017**
  - **Wednesday, June 7**: Instrumentation Documentation
  - **Thursday, June 8**: Instrumentation Drawing/Layout
  - **Friday, June 9**: Instrumentation Drawing/Layout
  - **Saturday, June 10**: Instrumentation Documentation
  - **Sunday, June 11**: Instrumentation Drawing/Layout
**Admission Procedure:**

Submit Dully filled Admission Form, along with Registration Fee.

**To,**
SmartBrains Engineers & Technologist Pvt. Ltd.
H - 86, Sec - 63, Noida -201301
Email : info@smartbrains.in
Phone +91-8955-560-560, +91-120-410-4991

**Mode of Payment :**

Registration fee will be 50% of course module fee

Registration fee is acceptable by DD/ Cash or online bank Transfer

The DD should be in favour of SmartBrains Engineers & Technologist Pvt. Ltd., Payable at Ghaziabad.

Online Bank Transfer should be in favour of SmartBrains Engineers & Technologist Pvt. Ltd.

PA/C NUMBER : 071805001090
PRTGS/NEFT IFSC CODE : ICIC0000718

- Training programs provided in SmartBrains are approved, affiliated and certified by National Skill Development Corporation of India.
- SmartBrains has right to expel any student at any time for misbehavior, poor attendance without refunding the fees.
- Certification will be issued after successful completion of program followed by assessment examination.
- SmartBrains strictly follows rules and regulations of NSDC in conducting examinations and assessments.

**Declaration**

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