

# TRAINING COURSES BROCHURE

## 2017 Electrical Design Engineering for Oil & Gas

### PROGRAM OUTLINE

- EDE 101. Fundamentals of Electrical Load Estimation of Plants
- EDE 102. Developments of Single Line Diagrams and Control Schematics
- EDE 103. Electrical Equipments Selection Sizing and Protections
- EDE 104. Cables Selection, Sizing and Cable Routing
- EDE 105. Plant Lighting and Illumination Design
- EDE 106. Plant Earthing Design and Protections
- EDE 107 . Hazardous Area Classification
- EDE 108 . Substation / Switch Yard Design
- EDE 109 . System Studies on ETAP Software



# SmartBrains Training Program

**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 many courses.

## SmartBrains Affiliation & Accreditation



**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 recognition & certification to the candidates.

## 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

Training Courses	Course Duration	Course Fee	March
EDE 101- Fundamentals of Electrical Design & Load Estimation of Plants	1 Day	INR 2000/-	28th October
EDE 102- Developments of Single Line Diagrams and Control Schematics	1 Day	INR 3000/-	28th October
EDE 103- Electrical Equipments Selection Sizing and Protections	2 Day	INR 8000/-	29th 30th October
EDE 104- Cables Selection, Sizing and Cable Routing	1 Day	INR 4000/-	31st October
EDE 105- Plant Lighting & Illumination Design	1 Day	INR 4000/-	1st November
EDE 106- Fundamentals of Plant Earthing Design	1 Day	INR 4000/-	2nd November
EDE 107- Hazardous Area Classification	1 Day	INR 2000/-	3rd November
EDE 108- Substation / Switchyard Design	1 Day	INR 3000/-	3rd November
EDE 109- System Studies on ETAP Software	2 Day	INR 15000/-	4th 5th November



## 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 expenses

### • 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

**COURSE OUTLINE**

Concept of EPC Projects  
 Fundamentals of Power Generation, Transmission, distribution and utilization.  
 Introduction of key electrical equipments used in projects  
 Overview of Codes & Standards IEC / ANSI / IEEE  
 Introduction of P&ID  
 Preparation of Load Schedule  
 Determination of power Supply Capacity  
 Standby Capacity consideration  
 Rating Of Motors In Relation To Their Driven Machines  
 Rating of other Electrical Equipments

October  
2017

28  
Saturday

**COURSE OUTLINE**

Introduction to Single Line Diagram	Introduction to Control Schematics
Design & Development of -	Block Diagram
- Key SLD	Typical Schematics for Motor Feeder
- Detail SLD	Typical Schematics for Power Feeder
- Lighting system SLD	Typical Schematics for Transformer Feeder
- Small power SLD	
Metering and Control diagram	

October  
2017

28  
Saturday

**COURSE OUTLINE**

Selection, Sizing, Protection, Specification, Data-Sheet, Vendor Data Review  
 Of following Electrical Equipments-

- Generators	- Power Capacitor Banks	- C T/PT
- Transformers	- HV/MV/LV Switch gears	- Bus Duct
- Motor	- HV/MV/LV Capacitor Bank	- AC UPS
-Equipment Protections	- Power Reactor	- DC UPS

October  
2017

29  
Sunday  
30  
Monday

**COURSE OUTLINE**

Power and Control cable Introduction	Cable Schedule
Cable selection	Cable interconnection Schedule
Cable sizing for Low voltage system	Selection and Sizing of Cable Tray
Cable sizing for High voltage system	Cable tray schedule
Voltage Drop Consideration	Cable Drum schedule
Let through Energy consideration	Conduit Selection
Earth fault Loop Impedance consideration	Cable routing Layout
	Cable Tagging & Installation details

October  
2017

31  
Tuesday



## EDE-105 Plant Lighting & Illumination Design

November  
2017

1

Wednesday

### COURSE OUTLINE

Introduction  
Type of Lighting Fixtures  
Selection of Lighting Fixtures  
Preparation Of Fixture Schedule  
Indoor Illumination Calculation  
Outdoor Illumination Calculation

Street Lighting calculations  
Calculations on Software  
Lighting Layout Design  
Lighting Installation Detail  
Small Power selection  
Lighting Board Schedule  
Material Take Off

## EDE-106 Fundamentals of Plant Earthing Design

November  
2017

2

Thursday

### COURSE OUTLINE

Requirement of Earthing in Industrial Plants  
Earthing Design calculations  
Type of Earthing and Details  
Earthing Installation Details  
Earthing Layout Design  
Power supply System Grounding  
Equipments (Protective) Earthing

Ground Electrode System  
Lightening Protection Requirement  
Lightening Protection Calculation  
Lightening Installation Details  
Lightening Layout Design  
Material Take Off

## EDE-107 Hazardous Area Classification

November  
2017

3

Friday

### COURSE OUTLINE

Zone /Division Classification  
Types Of Protection For Hazardous Areas  
Hazardous source List Preparation  
Certification Of Hazardous Area Equipment

Marking Of Equipment Nameplates  
Hazardous Area Drawings / Layouts  
Preparation

## EDE-108 Substation / Switch Yard Design

November  
2017

3

Friday

### COURSE OUTLINE

Introduction  
Type of Sub-Stations  
Legislation, Standards,  
Drawings and Documents  
Substation Layout and Equipment

Surge Arresters, Line Traps, Power Insulators,  
Bushings, Bus bars and Connectors  
CT, PT, PLCC, BPT  
Interlocking Lightning Protection, Lighting  
Substation Earthing Protections

## EDE-109 System Studies on ETAP Software

November  
2017

4

Saturday

5

Sunday

### COURSE OUTLINE

Overview of ETAP Software,  
Project Settings,  
One-Line Diagram,  
Load Flow Analysis, Configuration & Case Study ,  
Circuit Analysis (Fault Calculations and Stability Studies)  
Motor Starting Study

## 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](mailto: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



## Declaration

- 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.

### SmartBrains Engineers & Technologist Pvt. Ltd.

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#### Pune

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