

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/-	3rd June
EDE 102- Developments of Single Line Diagrams and Control Schematics	1 Day	INR 3000/-	3rd June
EDE 103- Electrical Equipments Selection Sizing and Protections	2 Day	INR 8000/-	4th 5th June
EDE 104- Cables Selection, Sizing and Cable Routing	1 Day	INR 4000/-	6th June
EDE 105- Plant Lighting & Illumination Design	1 Day	INR 4000/-	7th June
EDE 106- Fundamentals of Plant Earthing Design	1 Day	INR 4000/-	8th June
EDE 107- Hazardous Area Classification	1 Day	INR 2000/-	9th June
EDE 108- Substation / Switchyard Design	1 Day	INR 3000/-	9th June
EDE 109- System Studies on ETAP Software	2 Day	INR 15000/-	10th 11th June



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

June
2017

3
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	

June
2017

3
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

June
2017

4
Sunday
5
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

June
2017

6
Tuesday

EDE-105 Plant Lighting & Illumination Design

June
2017

7
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

June
2017

8
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

June
2017

9
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

June
2017

9
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

June
2017

10
Saturday
11
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.
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Email : info@smartbrains.in
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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.

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