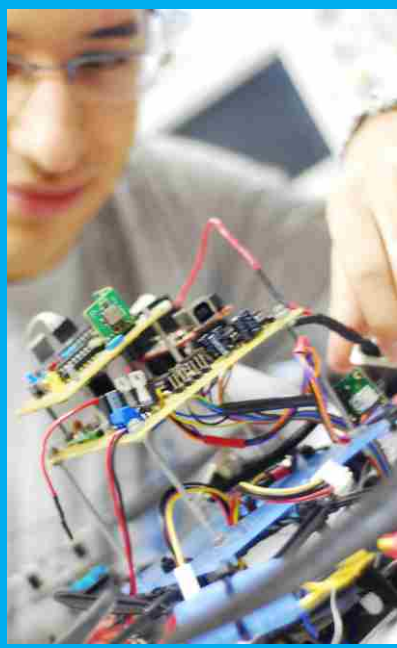


## Electrical Drawings and Schematics



### What You Will Learn...

- Various types of electrical drawings and their applications
- Planning electrical drawings, selecting a proper (paper) size for each type of drawing and the most appropriate scale to be used
- Use of industry-standard symbols/representation approach
- Formulation of company standards for drawing naming and preparation
- Drawing office organisation and workflow procedures
- Use of CAD tools and linkage to CAM for manufacturing
- Challenges in the management of CAD drawings and future possibilities

**SmartBrains** Oil and Energy Institute provides premium training courses for energy industry executives and fresh engineering graduates. Our success and distinguished reputation is thanks to our commitment to provide first-class programmes to our clients. Combining leading professionals from across the industry as lecturers and an interactive, practical format, the lessons learnt in a SmartBrains for Energy course are directly transferable back to the work place.

## Our Strategic Objectives

To be recognized by industry and employers as a highly reputable training organization. Provide dynamic leadership, sound management and excellence in training. Continue to improve our services through quality management processes. Invest in and value our people through professional development activities. Grow our business through innovation and to continue to be financially secure. Be influential in the economic development of the industries we serve nation wise

## Our Mission

“To provide quality training and assessment services and to prepare our students for a fulfilling professional career in their chosen industry. We are committed to upholding our values of providing excellence in training”

# Course STRUCTURE



“I would like to thanks T&P Team of Smartbrains who helped me to get skill set on Electrical System Design. The learning experience was good and placement is excellent”

**Zeeshan Ahmad**

Ankit Electrotech Engineers Pvt Ltd, Noida

## ENGINEERING DRAWINGS - AN INTRODUCTION

- Drawings – their relevance to engineering
- Origin of worldwide standards in electrotechnology
- Purposes served by different types of drawings
- Standards in a drawing office
- Organisation of a typical drawing office
- Printing and distribution – different options for making multiple copies

## LOGIC DIAGRAMS

- Purpose
- Typical examples
- Use of symbols
- Applications
- Logic diagrams spread over a number of sheets
- Cross-referencing

## COMPONENTS OF A DRAWING, DRAWING SIZES AND SCALES

- What is a typical engineering drawing made up of?
- Various categories of electrical drawings
- Planning a drawing
- Sizes/arrangement
- Single and multi-sheet drawings
- Use of drawing scales
- Multi-scale drawings
- Title block in a drawing and what should a title block contain?
- Legend block
- Bill of materials block
- Drawing notes block
- Revision history, revision numbering and use of revision marks

## SYMBOLS USED IN ELECTRO TECHNOLOGY AND GOVERNING STANDARDS

- Which are the drawings that need symbols?
- Symbols as per electro-technology standards – particularly IEC
- Non-standard symbols – when and why?
- Use of colours and line types in representing various services
- Company standards for drawings – why?

## SINGLE LINE AND 3-LINE DIAGRAMS

- Purpose
  - Typical examples
  - Use of symbols
  - The differences between single-line and 3-line diagrams
  - Applications
  - Conventions used
- Practical exercises involving reading and interpretation of single line diagrams

## SCHEMATIC DIAGRAMS

- Purpose
  - Typical examples
  - Use of symbols
  - Applications
  - Schematics spread over a number of sheets
  - Cross-referencing between coils and contacts
- Practical exercises involving reading

## CABLING AND WIRING DRAWINGS

- Purpose
- Typical examples
- Sub types of cabling drawings
- Cable layouts
- Cable schedules
- Tray/conduit schedules
- Control cable interconnections
- Panel internal wiring
- Applications
- Conventions used

## LAYOUT DRAWINGS

- Purpose
- Typical examples
- Sub types of layout drawings
- Electrical room layouts
- Lighting and lightning conductors layouts
- Earthing layouts
- Cabling layouts
- Applications
- Conventions used

## ADVANCES ARISING FROM COMPUTER AIDED DRAFTING (CAD)

- Drawing office revolution by CAD and the role of PC based CAD applications
- 2-D and 3-D CAD applications and links to CAM
- Drawing to true dimensions in CAD applications
- Use of symbols, attributes and symbol libraries
- Automated bill of material generation from a CAD drawing
- Information sharing on multi-disciplinary drawings
- Concept of layers and their use in sharing information
- Automation of drawing through programming
- Linking imagery with drawings – GIS related applications

## MANAGEMENT OF DRAWINGS

- Planning and assigning of drawings
- Need for drawing numbering standards
- Drawing process flow
- Revision control and ownership of drawing
- Comments and their marking
- Drawing management system for work flow control

# Why

## SmartBrains?

SmartBrains is the ultimate choice for all the working & non working engineer's in energy Sector training requirements. Our extensive portfolio of energy training courses are:

- ▶ 100% focused on the Oil and energy industry.
- ▶ Guided by the industry's renowned professionals with unprecedented knowledge of the Oil and energy industry.
- ▶ Highly interactive program with practical and relevant case studies.
- ▶ Training by extensively researched self developed cutting edge techniques.
- ▶ Skill development techniques with comprehensive set of documentation, practical skills and tools used in the Industry.

### Admission

#### Requirements

- ▶ Duly Filled Application Form
- ▶ 2 Photographs
- ▶ Photo State of Qualifying Examination
- ▶ Address Proof
- ▶ I.D. Proof
- ▶ Latest Resume



- ▶ The perfect opportunity to develop network and experiences with knowledge sharing.
- ▶ Internationally acclaimed engineering qualification.
- ▶ Designed for both Fresh engineers and working professionals to attain growth in oil and energy industry.
- ▶ One of the finest international faculty.
- ▶ Interactive, interesting and motivational training sessions.
- ▶ Access to enormous reference books and research materials.

### Declaration

- ▶ This training program is on AUTONOMOUS basis conducted by SmartBrains.
- ▶ SmartBrains has right to expel any student at any time for misbehavior, poor attendance without refunding the fees.
- ▶ Certification will be issued only after completion of course, submission of all assignments and passing all the examinations.
- ▶ SmartBrains has its own rules and regulations about conducting examinations and assessment of examinations

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