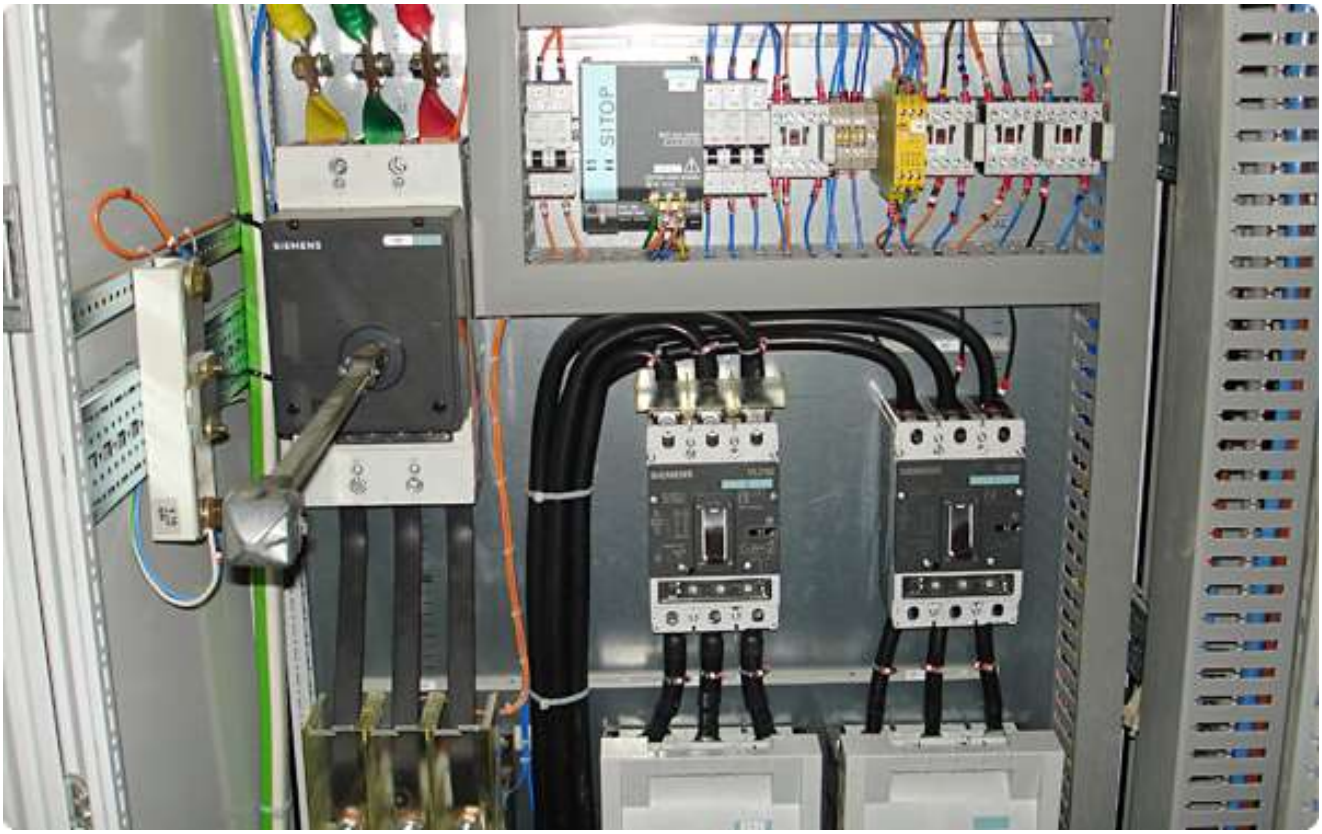
ICTD

المركز العالمي للتدريب والتطوير

International Centre For Training & Development



Low Voltage Systems, Design & Testing

H.H. Sheikh Sultan Tower (0) Floor | Corniche Street | Abu Dhabi – U.A.E | www.ictd.ae | ictd@ictd.ae

Course Introduction:

This course provides the skills, knowledge, and techniques necessary to become proficient to conduct LV mission critical power system modeling, design, and analysis. The purpose of this course is to develop a thorough understanding of capabilities and analytical techniques to solve a variety of LV system challenges presented in mission critical facilities (e.g. railway signaling power systems, data centers, etc.).

An overview of user interface will be covered including system modeling of UPS, transformers, etc., one-line diagram construction, Multi-Dimensional Database, Cable, Electric Shock calculation, Protection and Selectivity, report generation and more. The workshop exercises and tutorials are customized for LV systems.

Course Objectives:

Upon the successful completion of this course, each participants will be able to:-

Who Should Attend?

This course is intended for Consultants, designers, engineers and electrical contractors who are designing and maintaining low voltage systems. This training is tailored for both new and existing users.

Course Outline:

Day 1: Low-Voltage (LV) Power System Construction & Analysis

- Overview
- Modeling of LV Power Systems
    - AC and DC system components
    - 3-phase, 2-phase, 1-phase Systems - Mixed TN, TT, IT Earthing Types
    - DNO, Railway Traction, Generator, PV Array, Wind Turbine Generator
    - UPS Systems, Panel Systems, DC Systems, Battery Systems
    - Motors, Loads, Transformers (configurations & vector groups)
    - Templates: Sub-system Blocks
    - Theme Manager & Earthing Type Identification

Day 2: LV System Analysis and Equipment Sizing

- Load Flow Analysis (AC & DC), Short Circuit Analysis
- LV Equipment Selection & Sizing
    - Protective Devices
    - Phase Conductors

- Protective Earthing (PE) Conductors - Electric Shock Protection
- Utility, Transformer, Battery, UPS, PV Array, Wind Turbine Generator

Day 3: Protection & Coordination

- Protection & Coordination/Selectivity Analysis
- Sequence-of-operation of Protective Devices
- Earthing Mat/Ground Grid Analysis
- Multiple Transformer Inrush

Day 4: Case Studies & Additional Topics

- Railway Signaling Power System Case Study
- Data Center Case Study
- Harmonic Analysis, Motor Acceleration Analysis, Reliability Analysis
- Project Management & Merge
- Library Management

Course Methodology:

A variety of methodologies will be used during the course that includes:

- (30%) Based on Case Studies
- (30%) Techniques
- (30%) Role Play
- (10%) Concepts
- Pre-test and Post-test
- Variety of Learning Methods
- Lectures
- Case Studies and Self Questionaires
- Group Work
- Discussion
- Presentation

Course Certificate:

International Center for Training & Development (ICTD) will award an internationally recognized certificate(s) for each delegate on completion of training.

Course Fees:

To be advised as per course locations. This rate includes participant's manual, Hand-Outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Timings:

Daily Course Timings:

08:00 - 08:20	Morning Coffee / Tea
08:20 - 10:00	First Session
10:00 - 10:20	Coffee / Tea / Snacks
10:20 - 12:20	Second Session
12:20 - 13:30	Lunch Break & Prayer Break
13:30 - 15:00	Last Session