

Emerging Trends in Electrical Power Distribution & Automation

Program Description

Course Name	Emerging Trends in Electrical Power Distribution & Automation
Course Name as on Certificate	Certification in Emerging Trends in Electrical Power Distribution & Automation
Certificate Type	Certificate of Completion by IITM Pravartak and L&T EduTech
Certificate Issued by	IIT MADRAS and L&T EduTech
Course Objectives	<p>Course Overview:</p> <p>The entire distribution system is going through a major shift by adopting latest technology like Compact Substation, Gas Insulated Ring Main Units, Auto reclosure, Sectionalizer, Monitoring and controlling of entire system through a centralized SCADA system. So, we see a gap between academia and industry. So what is the solution? The answer to these questions can be found in this course “Emerging Trends in Electrical Power Distribution & Automation” where we try to bridge the gap with practical-oriented approach to the subject along with conceptual knowledge covering the latest technological trends like SCADA & automation developed by L&T’s expertise. The course adopts a cross-disciplinary approach to ensure that the learners understand the type of distribution systems, green field construction, ring main units etc. We have also taken all the safety aspects in every area of work throughout the course.</p> <p>This course gives the learners insights about:</p> <ul style="list-style-type: none"> • Practical demonstration of various distribution schemes. • Construction of Over Head distribution lines • Different stringing methods of Overhead lines • Components of Distribution Lines • SCADA & Automation for Distribution System <p>As we already stated, our approach is more practical with a blend of theoretical aspects. Starting from basics of Distribution philosophy, we cover statutory requirements of state and central government bodies, categorization of consumers based on loads, Safety clearances, Power factor improvement, site erection and installation of distribution equipment. Also, we make a great deal about different components of distribution system item by item so that an engineer who completes this course will be able to design and estimate the requirement. We are also demonstrating the Auto reclosure and Sectionalizer concepts in power distribution system through animation.</p> <p>Every distribution company is adopting the state-of-the-art technology in Automation and SCADA system for power distribution as globally we are moving towards Smart City implementation. To align with the technological developments in the industry, it is inevitable for any electrical engineer to learn about automation & SCADA system for</p>

	<p>his/her carrier development. In our course, we cover the fundamentals of automation, SCADA peripherals, overview of the SCADA software and hardware, Smart Metering & Optical Fiber cable network.</p> <p>Course Objectives:</p> <ol style="list-style-type: none"> 1. Learners will be able to understand the distribution lines - Primary and Secondary Distribution Types. 2. Learners will be able to understand the types of consumers, the load details and the losses that occur. 3. Learners will be able to understand the components of a distribution line ranging from in Poles, Structures, Insulators and Conductors, Aerially Bunched cables, Lightening Arrestor and Horn Gap Fuse. 4. Learners will be able to understand the overview of how systems like Auto reclosure and Sectionalizers. 5. Learners will be able to study recent technologies in distribution lines Ring Main Unit (RMU), Compact Substation (CSS) and Feeder Remote Terminal Unit (FRTU). 6. Learners will be able to understand the aspects of understanding SCADA in detail from the architecture to the peripherals and the protocols. 7. Learners will be able to understand Fibre Optics in detail. 8. Learners will be able to understand IED & FRTU in SCADA and Automatic Metering Infrastructure.
Eligibility	Students pursuing Diploma / UG / PG Programs in Electrical & Electronics Engineering
Pre-Requisites	Basic knowledge on Electrical Engineering
Target Segment	Students pursuing Diploma/ UG / PG Programs in Electrical & Electronics Engineering Faculties / Working Professionals in the above domain & other aspiring learners
Course Content	See Enclosed Program details – as Annexure 1
Pedagogy	Online Self-paced E-Learning Content
Assessment	One Final Assessment

Programme Faculty	<p>Dr. Akash Talwariya - Subject Matter Expert in Electrical Engineering at L&T EduTech</p> <p>He has over a decade of experience in both industrial and academic realms. He holds a PhD in Electrical Engineering focusing on "Game Theory Based Electrical Power System Optimization in the Presence of Distributed Energy Resources. He completed his postgraduate in Artificial Intelligence and Machine Learning at the National Institute of Technology, Warangal. He also received his BTech, respectively, in Power Systems and Electrical Engineering from Rajasthan Technical University. His areas of expertise include electrical power systems, machine learning, and smart grid technologies. Dr. Talwariya's professional accolades include the publication of 35 research papers in esteemed international journals and conferences, along with holding three patents, demonstrating his commitment to innovation in the field.</p>		
Duration	Units: 7 Hours: 6		
Class Schedule	Self-Paced		
Programme Highlights/USPs	<ol style="list-style-type: none"> 1. Overhead and Underground distribution system 2. 3 phase and single-phase loads 3. Electrical statutory clearances 4. Distribution line components 5. Auto reclosers and sectionalizes in distribution system. 6. Compact substation and Ring Main Units 7. SCADA system for power distribution 		
Total Fees		Total Fees (Rs.)	
	Total Programme Fee	Rs.1,900 /- inclusive of GST	

ANNEXURE 1

Proposed Course outline / programme / plan - Unit wise syllabus details.

Unit I - Types & Methods of Distribution
<ul style="list-style-type: none"> • Primary Distribution • Secondary Distribution • Design Data Requirement • Governing Authorities • Overhead (OH) Distribution Lines • Underground (UG) Distribution Lines
Unit II - Types of loads & Distribution of Power
<ul style="list-style-type: none"> • Classification of Consumers • Single Phase Loads • Three Phase Power Supply • Voltage Regulation & Power Factor • Distribution Losses • Electrical Clearances for Lines
Unit III - Green Field Construction of OH Lines
<ul style="list-style-type: none"> • Green Field Construction of OH Lines
Unit IV - Distribution Line - Components
<ul style="list-style-type: none"> • Poles- Different Types & Heights • Structures • Insulators • Conductors • Line Accessories • Aerially Bunched Cables • AB Cable Accessories • Lightning Arresters • AB Switch • Horn Gap Fuse

Unit V - Auto reclosers/Sectionalizes

- Medium Voltage (MV) Distribution
- Temporary Faults
- Permanent Faults
- Configuration of Auto Reclosures & Sectionalizers
- Distribution System - Loop Automation

Unit VI - OH Distribution Line Components

- Ring Main Units (RMU)
- Compact Substation
- Field Remote Terminal Unit

Unit VII - SCADA in detail

- Introduction to SCADA
- History of SCADA
- Architecture of SCADA
- SCADA Peripherals
- SCADA Protocols
- Fibre Optics
- SCADA Functions, Specifications & Benefits
- Types of SCADA
- Systems of SCADA, Control & Data Centre
- IED in SCADA
- FRTU & SCADA
- Automatic Metering Infrastructure
- Measuring the Improvement