

**Course Overview:**

Lightning strokes, as dangerous surges, cause considerable harm to human beings, buildings, industrial, and petrol installations as well as to electric power systems generation plants, transmission and distribution networks and their equipment. An understanding of the lightning phenomena, testing of electrical equipment to guarantee withstand lightning strokes and protective measures for systems, buildings, human beings, etc, seems necessary.

**Course Objective:**

This course is thus, devoted to the qualification of utilities electrical power engineers and specialists to be capable for properly and effectively dealing with the lightning phenomena, protection measures against lightning surges and equipment testing to prove capable to withstand lightning strokes.

**Course Outline:**

1. Introduction
2. Understand the lightning phenomena
3. Lightning characteristics
4. physical basis for lightning protection
5. General principles of Lightning Protection
6. Mathematical models for lightning
7. Risk Assessment: Probabilities and Realities.
8. Transient effects of lightning
9. The Grounding & Bonding Imperative:
10. Guidelines; Electro-Geological Model; Design Options; Solutions To Difficult Grounding Situations; Shielding & Bonding Examples;Case Studies.
11. Development of Ground flash density maps
12. Assessment and management of Risk due to lightning
13. Protection of structures - mainly Building Protection
14. Surge Protection
15. Lightning Protection for High-Risk Facilities including Chemical, Electronics,Explosives, Munitions & Nuclear Operations.
16. Lightning Detection:
17. Available Detector Technologies – Pros & Cons; Recommendations.
18. Inspection, Maintenance and Testing: Checklists for Facilities

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**Who Should Attend:**

Especially electrical power engineers should attend. Supervisors and qualified technicians can get considerable upgrading education. The course is also beneficial for other engineers such as mechanical, communication and petrol engineers.

**Training Language:**

EN / AR

**Training Methodology:**

- Presentation & Slides
- Audio Visual Aids
- Interactive Discussion
- Participatory Exercise
- Action Learning
- Class Activities
- Case Studies
- Workshops
- Simulation