



Power System Stability & Dynamic in Power System

Date	Venues	(\$Fees	Book your seat
14 Dec -18 Dec 2025	Cairo	2900	Register Now

Course Overview:

Power Stability is becoming an increasing source of concern in secure operation of present-day power systems. This practical course will provide a comprehensive overview of Power stability problems and methods of effectively addressing them in the planning, design and operation of electric power systems. This includes the basic concepts, physical aspects of the phenomenon, methods of analysis, examples of major power grid blackouts due to Power instability, and methods of preventing Power instability. The course will also cover in detail methods of Power control and reactive power planning in transmission networks.

Course Objective:

Power Stability is becoming an increasing source of concern in secure operation of present-day power systems. This practical course will provide a comprehensive overview of Power stability problems and methods of effectively addressing them in the planning, design and operation of electric power systems. This includes the basic concepts, physical aspects of the phenomenon, methods of analysis, examples of major power grid blackouts due to Power instability, and methods of preventing Power instability. The course will also cover in detail methods of Power control and reactive power planning in transmission networks.

Who Should Attend?

This practical course will provide a comprehensive idea of Power stability problems and methods of effectively addressing them in the planning, design and operation of electric power systems. This includes the basic concepts, physical aspects of the phenomenon, methods of analysis, examples of major power grid blackouts due to Power instability, and methods of preventing Power instability. The course will also cover in detail methods of Power control and reactive power planning in transmission networks.

Course Outline:

- **Introduction and Basic Concepts**

- Definition and classification of power system stability
- Conceptual relationship between power system stability, security and reliability
- Review of the concepts of active power and reactive power
- An elementary view of Power stability phenomenon

- **Equipment Characteristics Impacting on Power Stability**

- Synchronous machines

- Excitation systems
- AC Transmission
- Power system loads

- **Control of Reactive Power and Power**

- Control objectives
- Production and absorption of reactive power
- Methods of Power control
- Principles of reactive compensation in transmission systems
- Static and dynamic compensators

- **Typical Scenarios of Power Instability**

- Long-term Power instability
- Short-term Power instability

- **Methods of Analysis**

- Modeling requirements
- Dynamic analysis
- Static analysis; Q-V modal analysis
- Quasi-dynamic analysis
- Comprehensive assessment of Power stability for system planning and operation

- **Prevention of Power Instability**

- System design measures
- System operating measures
- Methods of identifying causes of instability and selecting remedial measures
- Case studies and illustrative examples
- Coordinated Power control schemes: secondary and tertiary Power control

- **Examples of Major System Disturbances Due to Power Instability**

- Incidents of long-term Power instability
- Incidents of short-term Power instability

Training Methodology:

- Presentation & Slides
- Audio Visual Aids
- Interactive Discussion

- Participatory Exercise
- Action Learning
- Class Activities
- Case Studies
- Workshops
- Simulation



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