JUPITER PRIME

Consulting • Training • Advisory

جوبيتر برايم للاستشارات والتدريب

COURSE BROCHURE

Power System Operation, Dispatch and Security Management Training Course

11 – 15 October 2027
Dar es Salaam

jupiterprime.uk

info@jupiterprime.uk

Registered in the United Kingdom and Saudi Arabia

Power System Operation, Dispatch and Security Management Training Course

Ref: 3204_121853 **Date:** 11 – 15 October 2027 **Location:** Dar es Salaam **Fees:** 7900 GBP

Power System Operation, Dispatch and Security Management is a 1-week training course for power system operators, control room engineers and network operations supervisors, who each prepare an operating day security plan for their own network. Variable renewable output, battery storage and tighter reserve margins now change the operating picture within minutes rather than hours. Jupiter Prime Training delivers Power System Operation, Dispatch and Security Management for the people who take these real-time decisions.

Why Power System Operation, Dispatch and Security Management Matters Now

Three forces are reshaping the control room. Solar and wind output swings with cloud and wind fronts, so forecast error has become a daily operating variable. Storage and flexible demand give operators new levers, but only when they are scheduled and dispatched with care. Networks run with disciplined security assessment ride through disturbances and keep costs in check; networks run on habit see overloads, frequency excursions and avoidable load shedding.

Who Gains Most from Power System Operation, Dispatch and Security Management

- Engineers watching real-time flows, voltages and alarms
- Staff who schedule generation, storage and reserve for the next day and the next hour
- Engineers who approve switching sequences and planned outage requests
- Shift supervisors who decide on corrective action during disturbances
- Engineers agreeing operating limits for renewable plant

A control centre shift team or an industrial network operations group gains most when several of its members attend together.

Power System Operation, Dispatch and Security Management Capabilities

Participants move from reading the live state of the network to choosing the cheapest secure dispatch and defending it to colleagues on the next shift.

- Assess the estimated network state and spot suspect measurements — shift supervisors
- Build a merit-order dispatch with reserve and ramping limits — scheduling engineers
- Apply frequency and voltage control actions during disturbances — control room operators
- Test planned outages against single-outage contingency cases — outage coordinators
- Weigh curtailment, storage dispatch and demand response against security margins — renewable plant owners
- Communicate an operating day security plan to the incoming shift — operations managers

Key Power System Operation, Dispatch and Security Management Terms

- State estimation — Combining imperfect measurements to give the most likely network voltages and flows.
- Economic dispatch — Allocating demand among available generators and storage so that total running cost is lowest within their limits.
- Operating reserve — Spare generation or flexible demand held ready for a lost unit or forecast error.
- Contingency analysis — Simulating the loss of a line, transformer or generator to check that the remaining network stays within limits.
- Primary frequency response — The automatic change in generator or storage output that halts a frequency fall within seconds.
- Curtailment — Instructing renewable plant to reduce output below what is available.

Power System Operation, Dispatch and Security Management Day by Day

Day 1: The Operating Picture and Its Pressures

- Control Centre Roles and Shift Handover — Clear Ownership of Real-Time Decisions
- Supervisory Telemetry and Alarm Displays — Prioritising Operator Attention During Events
- Network State Estimation — Detecting Bad Measurements Before Acting on Them
- Operating Limits for Lines and Transformers — Thermal, Voltage and Stability Boundaries
- Variable Renewable Output Patterns — Effect on Daily Balancing Risk

Day 2: Scheduling and Dispatch

- Load and Renewable Forecasting Inputs — Setting Day-Ahead Reserve Requirements
- Unit Commitment Choices — Which Generators Start and Which Stay Off
- Merit-Order Economic Dispatch — Lowest-Cost Loading Within Ramp Limits
- Battery Storage Scheduling — Charging, Discharging and State-of-Charge Margins
- Demand Response Dispatch — When Flexible Load Beats Extra Generation

Day 3: Frequency and Voltage Control

- Primary, Secondary and Tertiary Frequency Control — Restoring Balance After a Trip
- Automatic Generation Control Settings — Area Balance and Tie-Line Flows
- Reactive Power Dispatch and Tap Changing — Holding Voltage Profiles Across the Day
- Low Inertia Operation — Fast Frequency Response From Inverter-Connected Plant
- Under-Frequency Load Shedding Stages — Last-Resort Protection of the Network

Day 4: Security Assessment and Outage Coordination

- Single-Outage Contingency Screening — Ranking Overloads and Voltage Violations
- Remedial Action Selection — Redispatch, Switching or Controlled Curtailment
- Planned Outage Requests — Approving, Rescheduling or Refusing Maintenance Windows
- Switching Sequence Preparation — Safe Isolation and Restoration Steps
- Emergency and Restoration Procedures — Islanding and Black Start Readiness

Day 5: Practising the Operating Day Security Plan

- Next-Day Dispatch for a Mixed Thermal and Renewable Network — Applying Day Two Methods
- Contingency Run on the Proposed Schedule — Testing Reserves and Line Loadings
- Simulated Generator Trip Exercise — Frequency and Voltage Actions Under Time Pressure
- Outage and Curtailment Decision Log — Recording Reasons for Each Choice
- Operating Day Security Plan — Completing Dispatch, Limits and Shift Instructions

Applying Power System Operation, Dispatch and Security Management After the Course

- Run a single-outage contingency screen on the next week's planned outages and agree any rescheduling with the outage coordinator.
- Compare one week of dispatch against the merit order taught on the course and present the cost and reserve gaps to the shift team.

Power System Operation, Dispatch and Security Management Questions FAQ

What is Power System Operation, Dispatch and Security Management and why does it matter now?

It is the daily work of monitoring a network, scheduling generation and storage, and keeping supply secure after faults. It matters now because variable renewable output and storage make the operating picture change far faster than before.

Which roles gain most from Power System Operation, Dispatch and Security Management?

Control room operators, scheduling engineers, outage coordinators and shift supervisors gain most.

How does Power System Operation, Dispatch and Security Management differ from a power system design course?

It concentrates on running an existing network hour by hour. A design course lays out and rates new equipment instead.

What do you bring back from Power System Operation, Dispatch and Security Management?

You bring back an operating day security plan covering dispatch, reserve, contingency results and clear instructions for the incoming shift.

Power System Operation, Dispatch and Security Management: The Way Forward

The operating day security plan each participant completes first informs the next-day dispatch and reserve decision for their network. Shift supervisors, scheduling engineers and outage coordinators use it as a shared reference during handover. After its first use, revisit the renewable forecast assumptions and reserve margins, because the generation mix and storage fleet shift faster than operating instructions are rewritten.