Power System Operations

CENTRE FOR RENEWABLE & SUSTAINABLE ENERGY STUDIES

Stellenbosch UNIVERSITY IYUNIVESITHI UNIVERSITEIT

DATE 10 - 14 March 2025

VENUE Engineering Faculty, Stellenbosch University

ACCREDITATION

Certificate of attendance (4 CPD points) REGISTRATION CLOSED

Certificate of competence (4 CPD points) REGISTRATION CLOSED

15 academic credits at NQF 8 or 9 level READ MORE

DEADLINE Certificate course registration closes 14 calendar days before the course starts.

The number of attendees is limited. Bookings will be taken on a first come, first served basis. For academic module registration deadlines, please contact the relevant academic programme coordinator.

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PRESENTER

Dr Graeme Chown is a power systems control and operations specialist with over 30 years' experience in the electricity industry. He has extensive experience in power system operations, generation scheduling and dispatch, interconnected operations, electricity markets, electricity regulation, ancillary services, energy storage, transmission pricing, power system studies and power system modelling, and power station control.

COURSE COORDINATOR

Dr Karen Garner

Synopsis

Understanding the fundamentals of power system operations in a future with high shares of VRE, and the processes and technologies that support such operations.

Future power system operations: fundamentals

- Unit commitment, economic dispatch
- Tasks of a system operator (Operational planning, real-time operations etc.)
- Frequency stability, control and inter-area power flow
- Ancillary services (Operating Reserves and other)
- Technologies for ancillary services (batteries, demand response, VRE)
- Power generation and storage technologies from a operational perspective
- Black-start concepts- Impact of VRE on operational parameters (including inertia)
- Telecontrol /telecoms architecture

Future power system operations: processes

- Applications of short-term forecasting
- Processes for operating reserves, unit commitment, economic dispatch
- Market types (energy, ancillary services, capacity) and models
- Day-ahead operational planning and intra-day planning
- System security assessment
- Stability control options (ancillary services)
- Power system monitoring tools / performance monitoring
- Medium- to long-term operational planning
- Real-time operations: intelligent alarm management, state estimation for decision-making, real-time contingency analysis etc

Qualification and accreditation

The module is accredited for a variety of outcomes, depending on what the attendee registers for. Module contact time (40 hours) are shared by all attendees, but additional assessments, assignments, and projects will be specific to the outcome that the attendee registered for.

- The module is accredited for ECSA Continuous Professional Development (CPD) credits, and attendees can obtain a certificate of attendance (if all lectures have been attended) or competence (if all lectures have been attended and various assessments have been successfully passed).
- Unless otherwise stated, the module is also accredited for 15 academic credits at both NQF8 level (Post-graduate diploma) and NQF9 level (Masters), as part of various academic programmes. This requires a total time investment of 150 hours.

Delivery Model

- The module will be delivered over five days. Pre- and post-module assignments and projects are applicable depending on the outcome the attendee registered for.
- **Certificate of competence and academic attendees are required to attend the full module in person.** Certificate of attendance attendees have the option of attending the module in person, online only, or a mixture of these.

Who should attend

Engineers, technologists and technicians active in the energy sector. Government and local authority officials. Managers, planners and developers. Investors. Academic students.

Travel and Accommodation

All travel and accommodation arrangements are the attendee's own responsibility.

Prerequisites

Certificate of attendance: none
Certificate of competence / Post-graduate diploma at NQF8: NQF7 engineering qualification or equivalent
Masters at NQF9: NQF8 engineering qualification
IT infrastructure: For online attendees, adequate internet connectivity to connect reliably via Teams for the duration of the module. For Certificate of competence, Diploma and Masters attendees, a computer capable of running Windows 10 with user rights to install new software.

Module Fees

- The standard fee for the five-day module is **R14 200 for a certificate of attendance**, and **R19 100 for a certificate of competence**. Please refer to the University's latest study cost information for academic fees.
- From time to time funding is sourced to subsidise module fees for specific modules for attendees from specific areas of industry. Please refer to CRSES's short courses website for the latest information.
- Cancellations made up to 21 days before the module starts will be subject to a 15% handling fee. No refunds will be made after this date; however, substitutions will be accepted.
- Payment is mandatory for attendance.
- In the case of unforeseen circumstances, Stellenbosch University reserves the right to cancel the module or change the presenter/s, in which case all fees will be reimbursed in full on request.

Short courses:

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keziah@sun.ac.za
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Academic:

Please contact the relevant academic department, quoting course code 14481 774/874