# Power System Operations

CENTRE FOR RENEWABLE & SUSTAINABLE ENERGY STUDIES

**DATE** 1 – 7 December 2021

**VENUE** To be confirmed

**ACCREDITATION**

Certificate of attendance (4 CPD points) REGISTER HERE

Certificate of competence (4 CPD points) REGISTER HERE

15 academic credits at NQF 8 or 9 level READ MORE

**DEADLINE** 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.

## PRESENTER

**Dr Graeme Chown** is a director of PPA Energy (Pty) Ltd South Africa a wholly owned subsidiary of Ricardo PLC (UK). Dr Chown is a power systems control and operations specialist with over 30 years' international experience in the electricity industry. He has been with PPA Energy for over 12 years. Previously he worked for 18 years for Eskom.

## COURSE COORDINATOR

**Dr Bernard Bekker** holds the positions of Eskom Chair in Power System Simulation & Associate Director of CRSES within the Engineering Faculty at Stellenbosch University. His research focuses on power system planning, specifically related to the increasing prevalence of grid-connected distributed storage and generation.

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DEUTSCHE ZUSAMMENARBEIT

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## 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).
- 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.
- A blended classroom/online model will be followed, with students being offered the options to attend in person (covid dependent), online only, or a mixture of these.

## Who should attend

Engineers, technologists and technicians active in the energy sector. Government and local authority officials. Architects, 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
**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:
- **R12 000 for a certificate of attendance**, and
- **R14 000 for a certificate of competence**. Please refer to the University's latest study cost information for academic fees.
- Attendees from Eskom, municipalities, government, academia and industry that are actively involved in some aspect of the South African power system may apply for a **50% CPD fee reduction**.
- 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.

## Contact

+27 (0) 21 808 4069
crses@sun.ac.za
www.crses.sun.ac.za