

Smart Grid Technology Overview



CENTRE FOR RENEWABLE &
SUSTAINABLE ENERGY STUDIES



Stellenbosch
UNIVERSITY
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UNIVERSITEIT

DATE

03 - 07 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 7 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.



COORDINATOR

Dr Johann Strauss is a senior lecturer in the Department of Electrical and Electronic Engineering. He holds a PhD in Electrical Engineering. His main research fields are electrical energy systems and efficient energy conversion. For the past few years he concentrated in particular on free-piston Stirling engines/linear generators and photovoltaic systems (optimal operation and the short term energy yield prediction of large PV plants). He is also involved in research and development of energy storage and e-mobility technology.

OTHER PRESENTERS

Prof Bernard Bekker (Stellenbosch University)

Dr Armand Du Plessis (Stellenbosch University)

Dr Johan Beukes (Stellenbosch University)

Dr Justice Chihota (Stellenbosch University)

Mr Josh Dippenaar (Stellenbosch University)





Synopsis

Introduction to the key concepts of the Smart Grid, including information and communication technologies and their application and integration. The topics covered include:

- High level overview of electric power system (what is changing and accompanying opportunities and challenges) and introduction to the concept of the smart grid
- Inverter technology (configurations, properties, application consideration, grid influences)
- Introduction to generation, demand, storage and metering technologies and their integration on the future grid
- Application of distributed topologies (e.g. microgrids, virtual power plants, smart inverters)
- Extracting value from the smart grid
- Overview of information and communication technologies and topologies
- Active network management concepts / network visibility and wind / PV plant / DG control
- Substation automation and related IT technologies
- Fundamentals of cyber security within the electrical power system

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:

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

Academic:

Please contact the relevant academic department, quoting course code 13808 774/874