



CENTRE FOR RENEWABLE &  
SUSTAINABLE ENERGY STUDIES

# Smart Grid Technology overview

**Date:** 3 – 7 February 2020

**Venue:** E207, Electrical Engineering, Faculty of Engineering,  
Stellenbosch University, Stellenbosch

**Registration:** [CLICK TO REGISTER](#)

**Course fees:** R11 400

**Presenter:**



**Prof Johan Vermeulen**, associate professor in the field of power systems in the Department at Electrical and Electronic Engineering at Stellenbosch University, holds a Ph.D Eng in electrical engineering from Stellenbosch University. He is a Certified Energy Manager (CEM) and a Certified Measurement and Verification Professional (CMVP).

His research interests include Energy Management and Energy Efficiency, Measurement and Verification of Energy Conservation Measures, load modelling and forecasting, and the grid integration of wind and solar PV energy.

## Synopsis

The coursework targets load modelling strategies, short-term load forecasting, demand side management technologies, measurement and verification, mini- and microgrids topologies, tariff design and advanced metering infrastructure and data management. The load modelling component focuses on understanding of the concepts involved in deterministic and probabilistic load modelling, and application of these concepts to load forecasting. The demand side management component focusses on demand profile and energy management interventions, including maximum demand management, peak clipping, valley filling, load shifting, strategic growth, strategic conservation and energy efficient technologies. The measurement and verification of demand side management interventions are introduced, including process flow, project planning, baseline modelling, performance evaluation and the reporting protocols that apply. Concepts such as baseline modelling options and methodologies, baseline adjustments, measurement boundaries, energy auditing and uncertainty are addressed in detail. The tariff design aspects focuses on the theoretical framework for tariff design, particularly with reference to tariff regulations and policies, tariff theory on pricing, and tariff structures and models. Concepts such as smart metering architecture and the use cases for smart metering solutions, including smart billing, smart DSM and smart loss management are addressed.

The mini- and microgrids component focuses on system topologies and the associated control strategies. Aspects such as the interaction sensitivities between these technologies, the temporal perspectives of renewable energy resources and component sizing are addressed.

## Who should attend

Engineers, technologists and technicians with an interest in load modelling, load forecasting, energy efficiency and demand management, Measurement & Verification, tariffs and smart metering.

## Certification and Accreditation

The module has been registered with the Engineering Council of South Africa for 4 Continuous Professional Development points. A Certificate of Attendance will be awarded to all participants [who attend the full course](#).

## Venue and Time

This course will be presented at the Department of Electric and Electronic Engineering, Faculty of Engineering, Stellenbosch University and will run Mo-Fri from 08:00 to 18:00 on 3 – 7 February 2020. Directions can be obtained from: [crses@sun.ac.za](mailto:crses@sun.ac.za) or <http://crses.sun.ac.za/contact-us>

## Travel and Accommodation

Accommodation and travel are for your own account.

The Stellenbosch Information Bureau can be contacted at tel. 021-883 3584 for delegates who want to make their own accommodation arrangements. A list of available accommodation can also be obtained from [crses@sun.ac.za](mailto:crses@sun.ac.za).

## Registration

The course is designed for a restricted number of attendees so as to personalize and maximize the learning experience. Bookings will be taken on a first come first served basis.

## Course Fees

- Cancellations made up to and including 27 January 2020 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 course or change the lecturer, in which case all fees will be reimbursed in full, on request.
- The course fee includes all study material, tea/coffee, and lunch.

Faculty of Engineering  
Private Bag x1; Matieland, 7602  
South Africa  
Tel: +27 (0) 21 808 4069  
Fax / Faks: +27 (0) 21 883 8513  
[crses@sun.ac.za](mailto:crses@sun.ac.za)  
<http://www.crses.sun.ac.za>