



## Hydro and Ocean Energy (Certificate of Attendance)

**17 – 22 September 2018**  
**Sustainability Institute, Lynedoch, Stellenbosch**

### Synopsis

Ocean and hydro power can make a significant contribution to the generation of renewable electricity. In this introductory course both ocean and hydro energy associated with the elevation or movement of water will be studied, giving students a basic overview of the relevant resources, conversion technologies, project development and implementation, and the associated environmental and economic impacts.

### Hydro Energy

The course deals with various aspects including: Environmental, social and economic impacts and the Hydrological Impact Assessment Protocol. World and South African hydrological resource magnitude. Existing hydro installations in the world and in Africa. Types of hydro power plants and turbines. Turbine selection criteria: specific speed and specific power parameters. Turbine efficiency. Hydraulic design, hydraulic losses, pipe friction and other losses. Multiple turbine units. Basic operational constraints. Costing. Cost of hydro power. Micro hydro power systems. Technology developments. Future scenarios.

### Ocean Energy

In this course, the potential of converting the energy of ocean waves, currents, tides and salinity- and temperature gradients into electricity, will be explored. The various ocean energy resources will be studied, as well as its applicable conversion technologies. In addition, aspects such as resource measurement and assessment, technology readiness, environmental concerns and the economics of ocean energy projects will be addressed, with particular emphasis on the available resource along the South African coast.

**No academic credits can be obtained by attending this course as short course for industry.**

**Who should attend?**

Engineers, technologists and technicians active in the energy sector. Architects, planners and developers. Government and local authority officials. Environmental Investors.

### Certification and Accreditation

The module has been registered with the Engineering Council of South Africa for Continuous Professional Development points. A Certificate of Attendance with an indication of the CPD points and level will be awarded to all participants who attend the full course from Monday morning to Saturday lunchtime.

### Venue and Time

This course will be presented at the Sustainability Institute, Lynedoch, Stellenbosch and will run Monday to Friday, 17 -21 September 2018 from 08:00 to 17:00 and on Saturday 22 September 2018 from 09:00 – 13:00. Directions to the venue can be obtained from: <http://mecheng.sun.ac.za/index.php/en/contact-us>.

### Travel and Accommodation

All travel arrangements are for your own account. The Stellenbosch Information Bureau can be contacted at tel. 021-883 3584 for available accommodation near the university. A list of available guesthouses 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.

Registration must be done online at:

<http://apps.sun.ac.za/SCD/ApplicationForm.aspx?scourseid=4474>

No registration is final until you have received a confirmation by email from Stellenbosch University.

**Registrations close on Friday 31 August 2018**

### Course Fees

- Course fee for the five and a half-day course: R10 500
- **Cancellation of enrolment made up to and including Friday 31 August 2018 will be subject to a 15% handling fee.**
- No refunds will be made after this date; however, substitutions will be accepted.
- Attendance without payment will not be permitted.
- In the case of unforeseen circumstances Stellenbosch University reserves the right to cancel the course or change the lecturer with two weeks' notice, in which case all fees will be reimbursed in full on request.

- The course fee includes all study material, tea/coffee and lunches.

### Presenters

**Prof. Theodor von Backström** holds PhD and DEng degrees (Stellenbosch). He taught Fluid Dynamics and Turbomachinery at Stellenbosch University. He currently teaches Hydro Energy, and supervises graduate students in fluid machinery and renewable energy systems, and is rated by the National Research Foundation as a researcher with considerable international recognition.



**Dr James R Joubert** is a qualified civil engineer with a MSc in Coastal Engineering and PhD in Mechanical Engineering. His postgraduate studies focused on ocean wave energy conversion, resource mapping on the South African coast and the design of a novel wave energy converter. He has done various consultation projects for device inventors and companies such as De Beers Marine and Eskom. He also has a keen interest in sustainable building and worked as project manager for a developer of a green residential estate.



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