

6 – 8 July 2015, Mercure Sydney International Airport

# Power System Stability



APQRC



A professional development course in power engineering presented by the Australian Power Quality and Reliability Centre, School of Electrical, Computer and Telecommunications Engineering, University of Wollongong.

## Course Objectives

This course aims to provide the participants with the knowledge and skills essential to perform power system stability studies. The course will include a theoretical foundation and practical application of the most commonly used simulation and analysis techniques. This will be extended to determination of the most suitable methods of mitigating instability issues. The course will be delivered in an interactive manner allowing the participants to share their knowledge with each other.

## Course Benefits

Following the course you will have gained knowledge and skills to assist you in the following:

- Understanding of transient stability, voltage stability and oscillatory stability in power systems
- Modeling and analysis for transient, voltage and oscillatory stability assessment
- Interpreting transient stability and voltage stability simulation results
- Interpreting oscillatory stability results using frequency domain techniques
- Understanding how transient instability, voltage instability, or oscillatory instability could occur
- Finding measures to mitigate instability in power systems

## Who Should Attend?

Practicing engineers who are involved in planning and operation of power systems.

Practicing engineers working for equipment manufacturers, in particular, those involved in designing controllers to mitigate instability of power systems.

## The Venue

The course will be held at:

Mercure Sydney International Airport  
20 Levey Street  
Wolli Creek NSW

## About the Speaker

Udaya D. Annakkage received the B.Sc. degree in electrical engineering from the University of Moratuwa, Sri Lanka, in 1982, and M.Sc. and Ph.D. degrees from the University of Manchester, U.K., in 1984 and 1987 respectively. He is a Professor at the University of Manitoba, Winnipeg, Manitoba, Canada. His research interests are power system stability and control, security assessment and control, operation of restructured power systems, and power system simulation. He is a Registered Professional Engineer in the Province of Manitoba, Canada.

## Training Investment

The course investment provides for an inclusive industry related training package with course notes, lunches and morning and afternoon tea. Course fee per person is AUD\$1950 including GST.

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## Course Outline

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The course is conducted over three days commencing at 8:30 am on 6 July 2015 and comprises lectures, computer laboratories and demonstrations. Present course outline is:

### Day 1

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- Introduction to security of power systems
- Definitions of power system stability
- Security Assessment (including contingency analysis)
- Power system models for simulation and analysis
- Tools for simulation and analysis

### Day 2

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- Transient rotor angle instability
- Simulation of transient rotor angle stability
- Measures of transient stability and transient stability limits
- Case studies to demonstrate coherent groups, instability, and measures to enhance stability
- Voltage stability analysis and measures of proximity to voltage instability
- Case studies of voltage instability
- FACTS devices to enhance stability

### Day 3

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- Oscillatory rotor angle stability
- Stability of one machine to infinite bus system
- Synchronizing and damping torques, design of Power System Stabilizers
- Multi-machine power systems, oscillation modes, participation factors, and residues
- A case study to analyze the dynamic behavior of a power system using oscillation modes, participation factors, and residues.
- A case study of designing controllers to damp oscillations
- Torsional interactions and other types of sub-synchronous oscillations
- A case study of torsional interactions

## Accommodation

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Arrangements for accommodation are the responsibility of participants and costs are not included in the course fee. A list of hotels and motels in the Sydney Airport area will be supplied to participants upon registration.

## Enquiries

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Registration enquiries: Ms Raina Lewis  
School of Electrical, Computer and Telecommunications Engineering  
University of Wollongong  
Ph: 02 4221 3335  
Email: Raina\_Lewis@uow.edu.au

Course enquiries: Professor Sarath Perera  
Australian Power Quality and Reliability Centre  
University of Wollongong  
Ph: 02 4221 3405  
Email: sarath@uow.edu.au

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# Registration Form

**Please enroll me in the three-day course “Power System Stability” to be held at Mercure Sydney International Airport, Australia from 6 – 8 July 2015**

**Cost per person:** AUD\$1950 inclusive of GST

**Please register before 5 June 2015 (please see Note below).**

Surname.....Given Name.....  
Organisation.....Job title/position.....  
Postal Address.....  
State.....Postcode.....Country.....  
Telephone.....Fax.....  
Mobile.....Email.....  
Special dietary requirements.....

**Methods of Payment**

If you wish to pay by **credit card**, please fill out the details below and **email to rdennis@uow.edu.au**.

Please debit (circle):    Bankcard        Visa    Mastercard

Card number:

             

Expires:   /      in the amount of

AUD\$.....

Name on card: .....

Signature: .....

Email for receipt: .....

**Cheque payable to “The University of Wollongong”**

**Mail to:**        Power System Stability Course Registration  
                      School of Electrical, Computer and Telecommunications Engineering  
                      University of Wollongong NSW 2522  
                      Australia

**Note:** There is no guarantee that economic participation levels for this course can be achieved. Registrants will be notified on the 8 June 2015 if the course cannot proceed due to insufficient numbers. The program may be changed at any time due to unforeseen circumstances. If the course can not proceed for any reason, UOW will not accept liability of whatsoever kind for expenses incurred by any person or corporation with the sole exception of the course investment, which will be refunded in full.

