

CREATE CHANG

# Introduction to the Fundamentals of Power Systems

CPD Course, 23-24 June 2025

Power, Energy & Control Engineering Discipline at the School of Electrical Engineering and Computer Science (EECS), University of Queensland (UQ) is pleased to announce a twoday face-to-face CPD course in Brisbane focusing on the fundamentals of power systems.

This course will deliver the theoretical background information necessary along with the "hands-on" experience through industry standard simulation platforms and experimental test benches to understand the fundamentals of power systems.

This course is aimed at engineers/professionals from both electrical and non-electrical background working on power systems, specifically for the personnel from industries aligned with power system planning, operation, management, and maintenance.



This two-day face-to-face course will bring industry professionals together for dialogue and sharing of knowledge to better understand the fundamentals of power systems along with its modelling and operational aspects.

#### **Key Outcomes**

- Learn the basics of power system like phasor diagrams, per-unit, three phase source and load connections, and power calculations.
- Understand the modelling of power system components like generator, transmission line, load, transformer, etc.
- Learn about the transmission line compensation techniques and distribution line voltage compensation techniques.
- Be informed of the Y-bus matrix and power system load flow analysis technique.
- Understand the theory, modelling, and operation of synchronous machines.

#### Presenters

The presenters are the academic experts from the University of Queensland (UQ) as given below.

- Prof. Tapan Saha is a Professor of Electrical Engineering in the School of EECS at UQ and the leader of Power, Energy and Control Engineering discipline.
- A/Prof.(Richard) Yan is an A/Prof. in the School of EECS at UQ and was an ARC DECRA fellow.
- Dr. Feifei Bai is a Senior Lecturer in the School of EECS at UQ.
- Dr. Bonu Ramesh Naidu is a postdoctoral research fellow with the School of EECS at UQ

#### Who should attend

- Young engineers just starting out in their career in power system and engineers from other backgrounds.
- Consultants and designers in the power system, renewables, manufacturing, mining, industrial and infrastructure groups.

#### **Practical Component**

The course will have a half-day simulation (through industry standard software) and practical component at the end of each day, giving attendees the opportunity to gain hands-on experience with some of the concepts discussed during the course.

#### Cost

\$1600 + GST per person

### REGISTRATION

Registrations close 6pm, **13th June, 2025** (Unless all places are filled earlier).

#### Venue

Hawken Engineering Building (50) Room S-202, Staff House Road The University of Queensland St Lucia, Brisbane, Queensland

Enquiries and Further information: Email: ruifeng@eecs.uq.edu.au

## Introduction to the Fundamentals of Power Systems

| Day-1: Monday 23 June 2025  |   |
|-----------------------------|---|
| 08:30 - 09:00               | Welcome address and registration (Prof. Tapan Saha)                                 |
| 09:00 - 10:30               | Introduction to power system modelling (Prof. Tapan Saha)                           |
| 10:30 - 11:00               | Morning tea   |
| 11:00 - 12:30               | Transmission line compensation (Prof. Tapan Saha)                                   |
| 12:30 - 13:30               | Lunch   |
| 13:30 - 15:00               | Simulation (PSSE) and laboratory session 1 (Dr. Ramesh Naidu and<br>Dr. Feifei Bai) |
| 15:00 - 15:30               | Afternoon tea   |
| 15:30 - 17:00               | Simulation (PSSE) and laboratory session 2<br>(Dr. Ramesh Naidu and Dr. Feifei Bai) |
| Day-2: Tuesday 24 June 2025 |   |
| 09:00 - 10:30               | Power System load flow analysis (Prof. Tapan Saha)                                  |
| 10:30 - 11:00               | Morning tea   |

| 11:00 - 12:30 | Synchronous generator (A/Prof. Richard Yan) |
|---------------|---|
| 12:30 - 13:30 | Lunch                                       |
| 13:30 - 15:00 | Simulation (PSSE) and hardware session 1    |
|               | (Dr. Ramesh Naidu and Dr. Feifei Bai)       |
| 15:00 - 15:30 | Afternoon tea                               |
| 15:30 - 17:00 | Simulation (PSSE) and hardware session 2    |
|               | (Dr. Ramesh Naidu and Dr. Feifei Bai)       |



CRICOS Provider: 00025B TEQSA: PRV12080

CREATE CHANGE