EPRI | ELECTRIC POWER RESEARCH INSTITUTE

GEARED

GridEd

The Center for Grid Engineering Education

Utility Applications of Power Electronics

Live Online Course

Course Description

This course is one in a series of several courses developed and offered by GridEd to address the evolving forces that will alter the fundamental operating characteristics of the electric grid, transforming it from a one-way central supply structure to one that has bidirectional power flows resulting from distributed energy resources (DER). This course addresses aspects of interfacing various generation technologies with the utility grid through power electronics.

This class identifies and serves to fill the gaps between common course offerings such as Power Electronics and Power Systems. The class covers steady state and dynamic aspects of grid interface, along with teaching about various industry standards that require compliance prior to interconnection with the power grid. Students will also learn about modeling grid tied inverters which is a common building block to interface modern generation technologies with the utility grid.

Who Should Attend

The course is intended for anyone interested in the opportunities to incorporate distributed generation into the grid and how these technologies will change the way the grid works. Students will include utility engineers and technicians, procurement officers, regulatory compliance staff, legal staff, and possibly regulators. Previous technical training is helpful but not necessary.

Registration Information

Dates:	June 18th – 21st, 2018 2:00 PM – 5:00 PM Eastern
Course Length:	4 days (12 hours Total)
PDH Available:	12 hours
Register at:	http://grided.epri.com/courses.html
Registration Fee:	• $1,200 per person • 20% discount for organizations with three or more attendees • 25% discount for government employees (non-utility) • 25% discount for university professors* • 75% discount for graduate students* *University IDs required to qualify for professor or graduate student discounts.

Particpants will need: access to an Ethernet broadband internet connection (wireless not recommended) from a standard desktop/ laptop computer equipped with speakers, microphone and common web browser, i.e. Internet Explorer, FireFox, Google Chrome, etc. Students will join live, synchronous web conference sessions via Adobe Connect, with two-way voice capability through a telephone bridge. Students will need to install OpenDSS software prior to the start of the course. OpenDSS is unbalanced load flow software that is open source and downloadable free of charge. Sessions will be recorded and posted for later viewing.

Location:

Online - Live sessions will be recorded and available following the live web conference.

For More Information:

Amy Feser, afeser@epri.com, (865) 218-5909

Course Instructor:

Madhav Manjrekar, madhav.manjrekar@uncc.edu,

(704) 687-1003

Meet the Instructors

Dr. Madhav Manjrekar, Senior Member of IEEE, received his B.E. degree from Government College of Engineering, Pune, India, M.Tech. from Indian Institute of Science, Bangalore, India, M.S. from Montana State University, Bozeman, Montana, and Ph.D. from University of Wisconsin, Madison, Wisconsin, in 1993, 1995, 1997, and 1999 respectively. Currently serving as an Associate Professor at the University of North Carolina in Charlotte, Dr. Manjrekar has held various leadership and management positions at Vestas, Siemens, Eaton and ABB prior to joining academia. He holds 8 US and international patents, has published over 40 journal and conference papers, and has been named as an Emerging Leader in Energy by E4Carolinas in 2015.

Course Outline

Day 1

- **Fundamentals of Power Electronics**
  - Switched Mode Power Conversion
  - DC/DC Power Conversion
  - DC/AC Power Conversion

Day 2

- **Grid Tied Power Converter**
  - Circuit Design
  - Modeling and Simulations
  - Application to Photovoltaic Power Conversion
  - Smart grid systems and technologies

Day 3

- **Power Quality**
  - Issues
  - Mitigation Techniques
  - Devices

Day 4

- **Power Factor Correction**
  - Circuit Design
  - Modeling and Simulations

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