

# Engineering Courses

## Future Grid: Distributed Energy Resources, Microgrids, Energy Storage, Demand Response and Dynamic Pricing, and Electric Vehicle

### Training objectives:

This course provides a high-level overview of the various elements of the grids of the future based on distributed energy resources and resilient and robust operation of the power grid. Section A provides an overview of the various Distributed Energy Resources (DER) types and their functions, including Distributed Generation (DG) types. Section B provides an overview of microgrids, including GE's direct experience in microgrid feasibility studies. Section C provides an overview and discussion around the technologies and applications of energy storage (ES) ranging from frequency regulation to energy arbitrage. Section D provides an overview of customer side of smart grid, including demand response (DR) and dynamic pricing (DP). Section E provides an overview of electric vehicles and plug-in hybrid electric vehicles (EV/PHEV) and their grid deployment, impact evaluation, and smart charging. In addition, the course provides case studies of existing and planned DER and microgrid applications and deployments.

### The course is intended for:

Power system engineers, planners, and operators, DER and microgrid developers, as well as economists and policy makers working on readiness of the future grid where various elements of DER are expected to play an increasingly greater role.

### Main features:

- Overview of Distributed Energy Resources (DER)
- Types of Distributed Generation
- DER regulation and policy developments
- Microgrid development and applications
- Microgrid feasibility assessment, load & supply analysis, functional design, and cost-benefit analysis
- Overview of energy storage technologies: pumped hydro, flywheels, batteries, ultra capacitors, compressed air energy storage, etc.
- Energy storage applications and economics
- Overview of demand response applications and programs
- Various dynamic pricing rates and their application
- Introduction to EV/PHEV's grid deployment
- EV/PHEV charging technology, batteries, operations, smart charging, and grid impact

### Recommended prior knowledge:

Basic knowledge of electric power systems.

**Note: The course is held in English. Class subject to change. Class times are 8-4.**

For more information visit: [www.geenergyconsulting.com](http://www.geenergyconsulting.com)

