

# Modernizing the Smart Grid

An IEEE eLearning Library Course Program

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## New! Modernizing the Smart Grid

Virtually every crucial economic and social function depends on the secure, reliable operation of power and energy infrastructures. Energy, electric power, telecommunications, transportation and financial infrastructures have become increasingly interdependent, posing new challenges for their resilient and efficient operation.

All of these interdependent infrastructures are complex, geographically dispersed, non-linear, and interacting both among themselves and with their human owners, operators, and users.

This course program offers a look at the future of smart grid and how engineers can prepare and work with this new system. Course objectives include:

- Understanding and identifying holistic solutions: concepts, implementations, and successful outcomes
- Examining the increasing role of distribution systems in grid reliability and resiliency
- Exploring the foundational role of data communication networks
- Providing actionable insights and areas of opportunity for modernizing the smart grid to meet customer needs, as well as face competitive challenges from third parties

## About the Course Instructor

John McDonald is the Smart Grid Business Development Leader for GE Power's Grid Solutions business. John brings his 44 years of work experience in electric power system automation to this course. John is a Life Fellow of IEEE, which he joined in 1971 as an undergraduate Electrical Engineering student at Purdue University. John was the IEEE Power & Energy Society (PES) President in 2006–2007, and has written 100 articles and papers and co-authored five books.

## Modernizing the Smart Grid Quick Facts

Four courses developed by a leading Smart Grid industry expert

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# Modernizing the Smart Grid Course Program

## Modernizing the Smart Grid Course Listing

### Strong Before Smart

Focuses on how to think about grid modernization and explores the drivers of grid modernization and the power industry's shift in thinking from adding devices and systems to holistic solutions. This section of the course program discusses the role of policy, technology, and standards in creating holistic solutions. Module 1 explains the efficacy of a strong grid based on an information and communication technology, or ICT, foundation, and why current investments in intelligence and visibility focus on the distribution system.

### Smart Distribution Systems

The second module focuses on distribution: visibility and data for a self-Healing grid and addresses the standards and communication protocols that support a strong grid in which intelligent electronic devices, or IEDs, are integrated with the ICT foundation for visibility into distribution system functions. This section delves into the principles and practices of cybersecurity, including customers' data privacy. Module 2 takes a deep dive into six holistic solutions for efficiency, reliability, and resiliency and the flexible data communication architecture that enables them to meet utility challenges.

### The Digitized Grid

Examines methods for optimal operations of a smarter, digitized grid. The dozen topics covered in Module 3 are data-driven programs made possible by the big data that characterizes a digitized grid, from generation to end user. It begins by examining how the utility enterprise can optimize its use of data to support business drivers and customer service.

### Engaging Consumers in the Smart Grid Marketplace

Covers the new power industry reality, including consumers, third parties, and future markets.

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