



Distribution Grid Planning & Optimization

April 24 – 26, 2018

Asheville, NC

What is this course about?

Distribution Grid Planning is becoming more complex as Distributed Generation and Automated Systems become part of the landscape. This course begins with a discussion of tradition planning on radial systems with bulk generation. Smart Grid systems and Distributed Energy Resources are introduced as well as integration issues. This is an accelerated course designed to address compatibility between devices and systems, essential to avoiding sunken cost of conflicting investments.

Who should attend?

Those holding technical leadership positions within a distribution electric utility, including Engineers/Technicians, System Planners and Electric System Superintendent/Directors with responsibility for system planning and specifying equipment/systems.

Continuing Education Credits

Upon completion, attendees will receive a certificate for 18 Professional Development Hours (PDH). UC Synergetic is a licensed provider of continuing education by the Florida Board of Professional Engineers. UC Synergetic Courses have never been refused as professional development hours by any State PE Board.

Instructor Bios:

Mike Marshall is Vice President of UC Synergetic. Mike is an industry expert in the areas of power system planning, engineering, design, reliability assessment, project prioritization, and large scale wind and solar generation. During his 30+ years in the electric power industry he has been actively involved with all aspects of power generation and delivery. His experience includes work on major projects for utilities in North, Central, and South America, Africa, and Europe. He has authored numerous technical papers on topics that include distribution planning,

David Farmer, PE, is the Director of System Planning & Grid Technologies for UC Synergetic. He holds a Bachelor's Degree in Electrical Engineering from West Virginia University Institute of Technology and is a registered professional engineer in multiple states. Since 1983, Mr. Farmer has worked with electric utilities in power delivery planning, load forecasting, reliability analysis, engineering and operations, construction and design, training, and project management. David has worked for both investor owned utilities and electric cooperatives.

Chris Sticht, is a Senior Consultant for UC Synergetic. Mr. Sticht is a specialist in utility system planning, load analysis, planning software, underground, solar and Smart Grid. Chris has extensive background in planning, design, operations and protection. His background includes work on transmission systems, distribution systems, substations, and commercial building electrical systems. He has managed teams of engineers, designers and electricians. His experience includes consulting, contracting, work at two power flow software companies, and at several major utilities. He holds a MSEE from the University of Washington and a BSEE from Georgia Tech.

Jerry Josken is a Senior Consultant for UC Synergetic. Jerry holds a BS in Electrical Engineering Technology from the Milwaukee School of Engineering and a MBA from North Central College. During his 30+ year career with Eaton's Cooper Power Systems Jerry has served in a variety of engineering positions. Past leadership positions include Chair of IEEE Rural Electric Power Conference (2012) and GLEMS Distribution Equipment /Controls (2013-2014). Presently, Jerry coordinates UCS Training Programs.

Course Location & Hotel

Asheville and Western North Carolina's natural beauty has been preserved in the form of national parks, state forests, and wildlife sanctuaries. Nestled at the foothills of the Blue Ridge Mountain Chain and minutes from the Great Smokey Mountains National Park, attraction-rich is perhaps the most accurate way to describe this mountain town.



Hilton Asheville/Biltmore Park
43 Town Square Blvd.
Asheville, NC 28803
Reservations: 1 828-209-2700

A block of room has been reserved at for this course. Please mention the UC Synergetic meeting when making your reservations.

Course Registration

The course tuition is \$1495 per person. Tuition will include course materials, refreshments, and lunches on Tuesday and Wednesday. [Click here to register online.](#)

Hotel accommodations, transportation and other incidentals will be the student's responsibility.

Cancellations received after April 16, 2018 will receive a credit that can be used for tuition on a future UC Synergetic Course. The credit is good for one year and is transferable within the same company. In the unlikely case of course cancellation, UC Synergetic liability is limited to refund of the course registration fee only.

For additional information about this course, other UCS course offerings, or on-site pricing, please contact Jerry Josken at (919) 348-3432 or via e-mail at: jjosken@ucseng.com.

Grid Planning and Optimization

Course Outline

Asheville, NC – April 24 – 26, 2018

System Loading

- Load Diversity
 - Demand Response Systems.
- Load Forecasting and Weather Impacts
- Equipment Loading

System Losses vs. Load

- Calculating Losses
 - Power Factor
- Line Voltage Drop
- Volt/VAr Management & Options

System Reliability

- Effects of Mid Line Sectionalizing
- Effects of Tie to Adjacent Circuits
 - Effects of Reverse Power Flow

Smart Grid Characteristics

- Definition per Dept of Energy

Smart Grid Components

- Intelligent Electronic Devices (IEDs)

Communication for IEDs

- Mediums
- Protocols

Automated Systems

- Centralized Control
 - Self Healing Networks
 - Integrated Volt/VAr Control
- Peer to Peer Systems

Dispersed Energy Resources

- Definitions
- Types of Generation
 - Inertia vs. Non-inertia Based

Distributed Generation Integration

Issues

- Islanding
- Load Profile vs. Photovoltaic (PV) Output
- High Penetration of PV on Distribution Circuits
- Non-technical Issues

Justifying Capital Projects

- Engineering Economics