

Distribution Engineering Fundamentals

2 ½ Days: January 29 - 31, 2019

Raleigh, NC

What is this Course about?

Attendees will receive a broad overview of distribution engineering, analysis techniques, and a review of calculations used in making daily decisions. Practical concepts are emphasized to ensure sufficient understanding of the various components within the distribution systems. Real world problems are used to teach methods of calculation that are easily understood and put into practice. Graduate engineers consider this course excellent prep for the PE exam.

Who should attend?

Distribution engineering and technical personnel of any experience levels who desire a better understanding of the distribution system. New comers to electric distribution find this course to be the 101 class they should have had to prepare them for the electric utility environment. The experienced veterans find it to be the perfect avenue to tie practice back to academic theory.

Continuing Education Credits

Attendees will receive a certificate for 18 Professional Development Hours (PDH) for each class they attend. Pike Engineering is a Continuing Professional Competency Sponsor with the North Carolina Board of Examiners for Engineers and Surveyors

Instructor Bios:

David Farmer, PE, is the Director of System Planning & Grid Analytics for Pike Engineering. 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.

Jerry Josken is a Senior Consultant for Pike Engineering. 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 Pike Engineering Training Programs.

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Course Outline

Basic Electrical Theory

- Overview of Power Systems
- Impedance Modeling: R & X
- Electric Power Formulas
- Power Triangle
- Losses & Loss Reduction
 - Formulas
 - Loss Reduction Techniques

Steady State Analysis

- Voltage Profile Analysis
 - Voltage drop formula
 - Analysis process
- Capacitors & Regulators
 - Impacts
 - Location
 - Control settings & types
- Volt/VAR Management
 - Application Strategies
 - Demand vs. Energy Reduction
 - Techniques

Fault Analysis

- Fault Calculation Formulas
 - LLL, LL, LLG, LG
 - Fault Impedance
 - Asymmetrical & DC Offset

Transformer Basics

- Voltage Drop & Fault Impact
- Transformer Impedance
- Per Unit System
 - Base Quantities
 - Applications

Overcurrent Protection Essentials

- Protective Devices & Equipment
- Interpreting TCC Curves

Overvoltage Protection Essentials

- Protective Equipment
- Placement of devices

Reliability and Power Quality

- Reliability Indices
- Voltage Transient Analysis
- Flicker

Transformer Connections

- Y-Y, Y-D, D-Y, D-D
- Phase Shift
- Calculations

Miscellaneous Topics

- Distribution Engineering Practice
- Distribution Planning



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Course Location

This course will be held at the offices of **North Carolina Electric Membership Corporation (NCEMC)** in Raleigh, NC

The street address is:

3400 Sumner Blvd.

Raleigh, NC 27616

Hotel

There is no block of room reserved at any hotel for this seminar.

Suggested hotels:

Marriott Courtyard

3401 Sumner Blvd

Raleigh, NC 27616

Phone: (919) 645-0088

Hilton Garden Inn

6412 Capital Blvd

Raleigh, NC 27616

Phone: (919) 876-5650

Course Registration

The course tuition is \$1,495 per person. Tuition will include course materials, refreshments, and lunch on Tuesday and Wednesday.

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

It is recommended students bring an engineering calculator to class. Smart phones with scientific calculators would also be sufficient.

[Click here](#) to be forwarded to the online registration site.

Cancellations received after January 14, 2019 will receive a credit that can be used for tuition on a future Pike Engineering Course. The credit is good for one year and is transferable within the same company. In the unlikely case of course cancellation, Pike Engineering liability is limited to refund of the course registration fee only.

For additional information about this course, other Pike Engineering course offerings, or on-site pricing, please contact Jerry Josken at (919) 348-3234 or via e-mail at: jjosken@pike.com.