



Course Information Letter ---- E101

ELECTRICITY FOR NON-ELECTRICIANS E101

One thing we can all agree on is that if you are going to work on any high-voltage circuit, you better know what you're looking at and you better know how to proceed safely. This is exactly where this two-day course is heading. It's intended to help a non-electrician resolve his/her electrical problem in a safe manner.

To accomplish this goal, this course will provide an understanding on:

- exactly what is electricity,
- how electricity is produced, and
- how electricity is distributed to such places as homes, businesses, and industries, etc.

Additionally, this course will discuss how to ensure a safe working relationship with electricity that involves activities that do not require a master electrician. These include, but not limited to:

- how to read an electrical schematic;
- how to measure circuit parameters (voltage, current, and resistance);
- how to perform systematic troubleshooting; and
- how to properly size a wire for a given application along with its proper termination at the device and the breaker box.

Also, this course explains what constitutes an Assured Equipment Grounding Program, which comprises of describing the operation of a Ground Fault Circuit Indicator (GFCI) along with knowing when one is required at the workplace; and explicates the benefits of an Electrical Maintenance Planning Program.

Since everything electrical has to conform to the standards as described in the National Electric Code (NEC), this course will familiarize one with some of the terms along with their definitions; will familiarize one with the installation requirements of electrical equipment and electrical wiring; and will familiarize one with the requirements that identifies a qualified person.

WHO SHOULD ATTEND?

Personnel

Mechanics, HVAC Technicians, Machine Operators, Technicians, Non Electrical Engineers, General Maintenance Technicians, or any person who would benefit from learning to safely work around electricity.

Who Work At

Manufacturing Facilities, Hospitals, Commercial Buildings, Waste Water Facilities, Government Buildings, Schools, Shopping Centers, Apartment Complexes

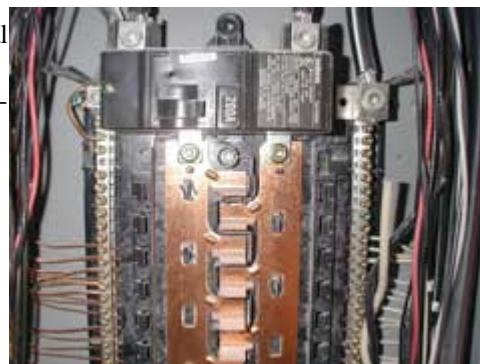
Are prime candidates for attending this course.

COURSE OBJECTIVES: Upon completion of this course the participants will be able to:

1. Demonstrate familiarity with Ohm's Law and the ability to apply this law in interpreting electrical circuits.
2. Describe hazards associated with working with electricity and demonstrate how to protect oneself from this hazard.
3. Demonstrate a working knowledge of the functionality of a multimeter, voltage testers, a non-intrusive ammeter; and identify the instrument that is used to verify the integrity of wire insulation.
4. Participants will have a working knowledge on how to properly select the function/range and connect a multimeter to measure current, resistance, and voltage.
5. Describe the difference between a conductor and cable and how they are classified.
6. Describe the accepted safe way of running wires from one location to another.
7. Demonstrate the proper technique on how to connect wires using a wire nut or terminal lug as well as to wire an electrical receptacle and/or switch, fluorescent ballast, AC motor, and DC motor.
8. Demonstrate knowledge regarding the use and application of different types of electrical diagrams.
9. Demonstrate knowledge necessary to replace a circuit breaker in a lighting panelboard.
10. Demonstrate knowledge as to what constitutes an Assured Equipment Grounding Program.
11. Demonstrate operational knowledge and ability to use a Ground Fault Circuit Indicator (GFCI).
12. Demonstrate a basic understanding of troubleshooting techniques involving branch and control circuits and the importance of the Lockout/Tagout concept.
13. Demonstrate knowledge regarding the purpose of the National Electric Code (NEC).

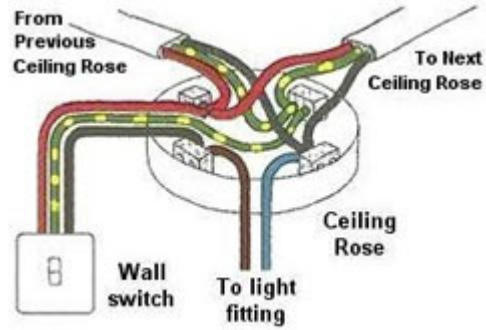
COURSE OUTLINE:

- I. **PRODUCTION OF ELECTRICITY:** Production of Electricity, AC / DC in Facilities, Circuit Parameters, Ohm's Law, Basic Electrical Circuits, Power in Electrical Circuits, Single Phase Versus Three Phase Systems
- II. **SAFETY ISSUES:** Hazards of Working With Electricity, Personal Protective Equipment (PPE), Safe Working Practices, Lockout / Tagout (LOTO), Electrical Safety in the Workplace, Power in Electrical Circuits
- III. **TEST EQUIPMENT:** Multimeters, Voltage Testers, Clamp on Ammeter, Meg-Ohmmeters
- IV. **USE OF TEST EQUIPMENT:** Measuring Circuit Parameters, Verifying Circuit is De energized, Determining Mode of Failure, Meg-Ohmmeters
- V. **WIRE SELECTION:** How a Conductor is Constructed, Classifications and Ratings, Selecting a Conductor
- VI. **RUNNING WIRE:** Raceways, Fittings and Boxes
- VII. **INSTALLING AND WIRING EQUIPMENT:** Wire Nuts, Terminals and Crimpers, Switches and Receptacles, Fluorescent Ballasts, AC Motors, DC Motors, Replacement Criteria, Temporary Wiring
- VIII. **UNDERSTANDING BUILDING ELECTRICAL SYSTEMS:** Reading One Line Diagrams, Introduction To Schematic Diagrams, Electrical Service, Major Components
- IX. **INTRODUCTION TO ELECTRICAL MAINTENANCE:** Assured Equipment Grounding Program, Use of a Ground Fault Circuit Interrupter (GFCI), Electrical Maintenance Planning and Activities, Precautions
- X. **TROUBLESHOOTING TECHNIQUES:** Branch Circuits, Control Circuits, Equipment Isolation, Fuses
- XI. **NATIONAL ELECTRIC CODE:** Purpose, Definitions, Terminology, Overview of Installation Requirements, Qualification of Personnel



WHAT YOU WILL RECEIVE:

- HPC Technical Services' fully illustrated textbook: Electricity for Non-Electricians, written by Mike Whisnant, an HPC consultant and training specialist.
- Ugly's Electrical Pocket Reference Guide --- a very useful reference on your day-to-day activities.
- HPC's Certificate of Completion, including 1.3 Continuing Education Units, as authorized by the International Associate of Continuing Education/Training (IACET).



COURSE DATES/LOCATION/FEE

November 27-28, 2007	HPC Offices in Sarasota FL, USA.....	US \$695
February 5-6, 2008.....	HPC Offices in Sarasota FL, USA.....	US \$795
June 3-4, 2008.....	HPC Offices in Sarasota FL, USA.....	US \$795
September 16-17, 2008	HPC Offices in Sarasota FL, USA.....	US \$795
November 17-18, 2008	HPC Offices in Sarasota FL, USA.....	US \$795

* Beware, course dates/locations are subject to change. Please see HPC website for latest information.

** Following each of these course dates, the next two dates, is HPC's course titled "Electrical Troubleshooting and Preventive Maintenance". Price is an additional US \$795. See CIL for E201 for details.

FREQUENTLY ASKED QUESTIONS

- Will HPC Technical Services bring this course to our location for our personnel only? YES, call or email Stephen Parker, stparker@hpcnet.com for a price quotation.
- Will HPC Technical Services customize the presentation at our site to suit our particular needs? Yes.
- Is HPC Technical Services' textbook available for purchase as a reference document? Yes. \$95 + S&H.
- What is the cost for HPC Technical Service to deliver this course at our location? Well, of course that can vary and it needs to be priced on an individual need basis. You gain from the customization and price.
- Is HPC Technical Services' consultants available for "technical advise" on the evaluation of your maintenance procedures, systems, tests? Yes. Call Harold Parker, hparker@hpcnet.com for a rate sheet.

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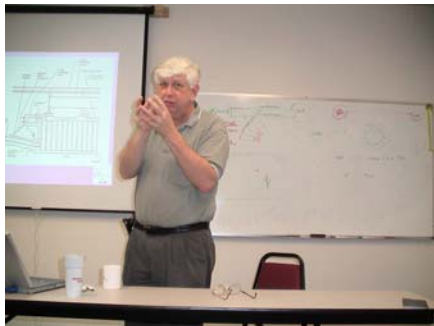
www.hpcnet.com

INSTRUCTOR(S):



Mike Whisnant. Mr. Whisnant's career began at the Oconee Nuclear Station in May 1970. Being assigned as the lead tech for the EHC along with all of the support systems for the turbine gave Mike the opportunity to not only learn the EHC System but to master the system during his 31 years with Duke. His involvement with the turbine enabled Mike to gain a working knowledge of the steam cycle within a power plant. This working knowledge of the steam cycle provided many opportunities to work on the electrical circuits involved with the steam cycle processes, which included power distribution, control, alarms, and trip circuits. And as with any electrical circuit, sometimes things go wrong, which leads to taking measurements for troubleshooting purposes. Mike is an excellent troubleshooter and with his wide-ranging knowledge of the different systems within a power plant, it provided the opportunity to travel to other non-Duke plants as a consultant to ensure system readiness after the NRC shut down these plants. After his retirement in June 2001, he joined the staff of H. Parker & Company in September 2001 as their E&I Training Specialist, who provides training courses on steam turbine controls, generators, electrical operating systems, protective systems, etc. His duties have expanded to include being a consultant in the performance of a functional checkout and calibration of the EHC Mark 1 & II along with providing troubleshooting support should it be required?

Leonard Fox. Mr. Fox has approximately 20 years experience working in the electrical field. In his earlier career he worked for several manufacturers of power transformers where he was involved in the installation, checkout and troubleshooting of said transformers. Later in his career he became involved in the inspection of property to ensure safety and code requirements have been met. Over the past few years, Mr. Fox has started to teach some of HPC's electrical maintenance courses.



Harold Parker. is the founder & President of H Parker & Company, Inc. Mr. Parker has worked in the "Power Generation" industry for 36 years, 14-years with GE as a Field Engineer, Start-Up Engineer, Technical Training Specialist and Manager. In 1983 Mr. Parker resigned from GE and started a training company, Schenectady Learning Systems, in Schenectady NY, which evolved into H Parker & Company, Inc. today. During this post-GE period, Mr. Parker was briefly employed as Manager Turbine-Generator Services with General Physics (2-years) and as a Field Engineer with Mechanical Dynamics & Analysis (2-years). Mr. Parker holds a BSME ('69 from Lawrence Institute of Technology), a MBA ('81 from the State University of New York @ Albany) and is a member of ASME and ASTD

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www.hpcnet.com

HPC TECHNICAL SERVICES

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Website: www.hpcnet.com

Mailing Address: PO Box 1734, Bradenton, FL 34206

REGISTRATION FORM

Company: _____

Plant: _____

Address: _____

City/State/Zip: _____

Telephone: _____ FAX: _____

Course Number/Title: _____

Course Dates: ____/____/____ Thru ____/____/____

Course Location: _____ Course Fee: _____

Please enroll the following individual(s) listed below:

Student #1: _____

Student #2: _____

Taking advantage of HPC's 3-4-2 Policy: Send 3, Pay for 2 when paying in advance.

Student #3: _____

Enrolled by: _____ **Date:** _____

METHOD OF PAYMENT

Check to Follow: _____

Check Enclosed #: _____

MC/Visa/AMEX #: _____

Expiration Date: _____ CV Code: _____

Purchase Order #: _____

HOW DID YOU LEARN OF THIS COURSE

Attended HPC courses before

Received a fax

Received an email

Internet search

Exhibit: _____

Received mailing

Other: _____