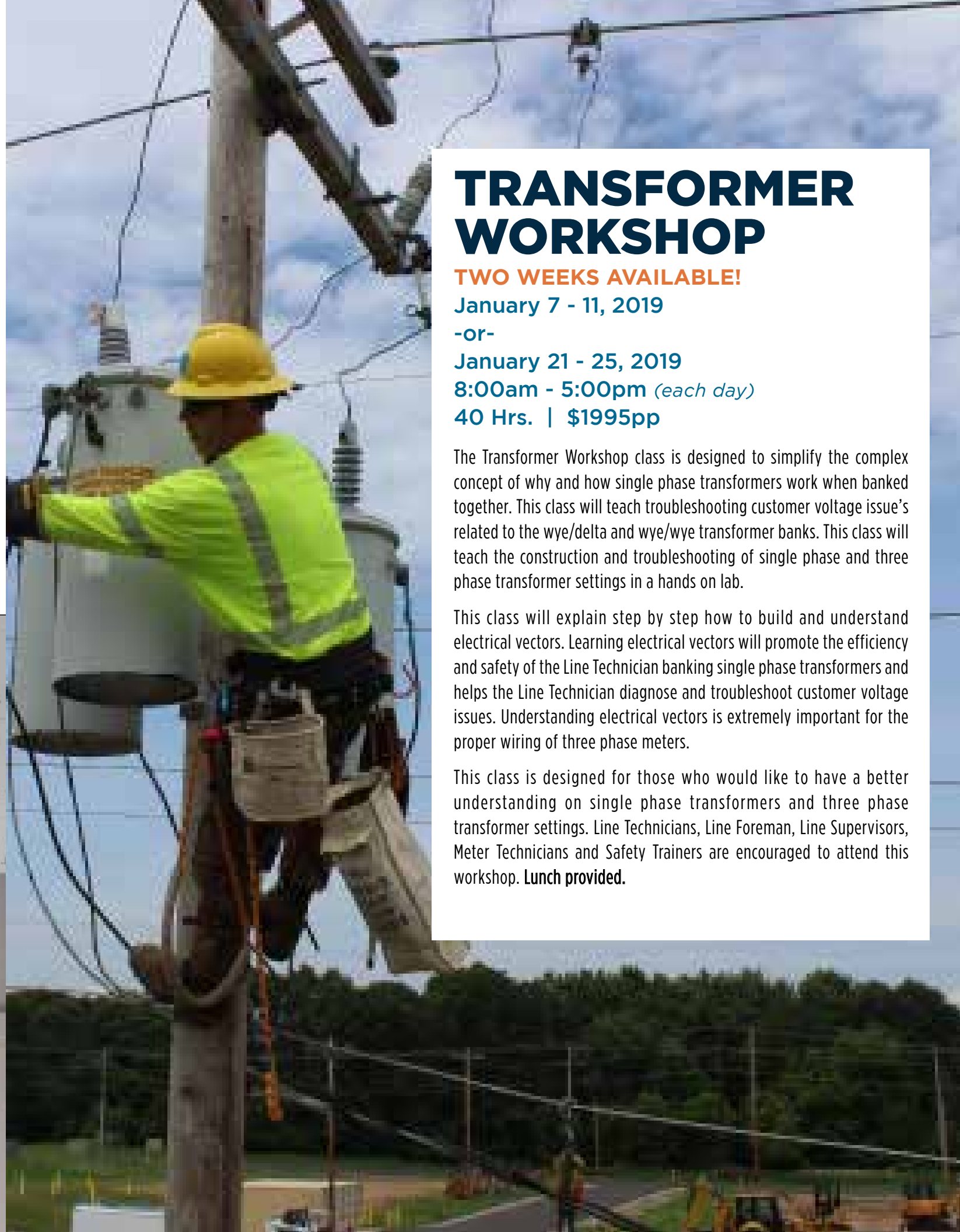


**Boost your skills
>>> and knowledge**

Register TODAY!

For more information about the courses or to register please visit **CORPORATETRAINING.NWTC.EDU** & search for course by course name or call **920.498.6301**.

For some of the courses listed in this packet there may be some materials required for additional purchase.



TRANSFORMER WORKSHOP

TWO WEEKS AVAILABLE!

January 7 - 11, 2019

-or-

January 21 - 25, 2019

8:00am - 5:00pm (each day)

40 Hrs. | \$1995pp

The Transformer Workshop class is designed to simplify the complex concept of why and how single phase transformers work when banked together. This class will teach troubleshooting customer voltage issue's related to the wye/delta and wye/wye transformer banks. This class will teach the construction and troubleshooting of single phase and three phase transformer settings in a hands on lab.

This class will explain step by step how to build and understand electrical vectors. Learning electrical vectors will promote the efficiency and safety of the Line Technician banking single phase transformers and helps the Line Technician diagnose and troubleshoot customer voltage issues. Understanding electrical vectors is extremely important for the proper wiring of three phase meters.

This class is designed for those who would like to have a better understanding on single phase transformers and three phase transformer settings. Line Technicians, Line Foreman, Line Supervisors, Meter Technicians and Safety Trainers are encouraged to attend this workshop. **Lunch provided.**

VOLTAGE REGULATORS

September 18, 2018

8:00am - 5:00pm

8 Hrs. | \$400pp

The reasons for voltage regulation and how regulation is accomplished will be discussed. Autotransformer theory is introduced to explain how a voltage regulator operates. Calculation of change in voltage per step, raise and lower will be discussed and measured. Hands on training will include set up and testing of voltage regulator controls. In the substation yard students will practice bypassing and changing a voltage regulator and placing the regulator back in service. Substation is deenergized.

Lunch provided.

SUBSTATION ENTRY TRAINING

October 1, 2018

8:00am - 1:00pm

5 Hrs. | \$200pp

Create an awareness for the hazards associated with a substation and the substation equipment. Discuss the approach distance guidelines, energized work permit and planning checklist.

Lunch provided.

UNDERSTANDING SUBSTATION DRAWINGS

October 2, 2018

8:00am - 5:00pm

8 Hrs. | \$400pp

Students will learn common equipment symbols, and the ANSI numbering system for substation control devices. This will be applied to developing an understanding of One and Three Line drawings of actual substations and control devices. Students are encouraged to bring substation and control drawings to class.

Lunch provided.

DIRECT CURRENT FUNDAMENTALS

Feb 18-19, 2019

-or-

Feb 25-26, 2019

8:00am - 5:00pm

16 Hrs. | \$800pp

Students will learn about basic electrical quantities such as voltage, current, resistance, and watts. How to calculate different electrical values using Ohm's Law will be introduced. Hands on instruction in the use of digital voltmeters and clamp on ammeters to measure these quantities in a series circuit is included.

Lunch provided.

ALTERNATING CURRENT FUNDAMENTALS

Feb 20-21, 2019

-or-

Feb 27-28, 2019

8:00am - 5:00pm

16 Hrs. | \$800pp

Inductors, capacitors and the effects of capacitance and inductance on voltage and current and voltage in an AC circuit will be discussed. True Power, Apparent Power, Reactive Power, and Power Factor will be discussed.

Lunch provided.

***Suggested prerequisite

Direct Current Fundamentals

UNDERSTANDING POWER FACTOR

Feb 22, 2019

-or-

March 1, 2019

8:00am - 5:00pm

8 Hrs. | \$400pp

As a basis to understanding power factor and the use of capacitors for power factor correction, the effects of inductance and capacitance in AC circuits will be discussed. Hands on practice will include measuring capacitor current while in service, disconnecting, discharging, grounding and handling of capacitors. Lunch provided.

*** Suggested prerequisite AC Fundamentals.

Join us July 2019 for the Energy Substation Conference! Watch for more information throughout the year.

SUBSTATION SWITCHING PROCEDURES

October 3, 2018

8:00am - 5:00pm

8 Hrs. | \$400pp

Through the use of One Line Diagrams students will learn the development of switching procedures to bypass and isolate substation equipment such as voltage regulators, reclosers, and circuit breakers. In the substation yard students will then practice the switching procedure they have developed. Substation is deenergized. Lunch provided.

*** Suggested prerequisite

Understanding Substation Drawings.

METAL CLAD SWITCHGEAR

October 4, 2018

8:00am - 5:00pm

8 Hrs. | \$400pp

Students will learn how to open, close, insert and withdraw 5 kV circuit breakers from cubicles in metal clad switchgear. PPE requirements will be discussed. The function and location of various switchgear instrumentation and breaker controls such as potential and current transformers, control switches such as breaker trip and close, non-reclose, ammeter, voltmeter, and more will be discussed. Students will learn how to identify and reset fault indication on electromechanical and microprocessor protection relays.

Switchgear is deenergized. Lunch provided.

SUBSTATION BATTERY TESTING AND MAINTENANCE

October 5, 2018

8:00am - 5:00pm

8 Hrs. | \$400pp

Fundamental charge/discharge theory of lead acid batteries, float and equalize voltage, capacity and specific gravity will be discussed. Hands on will include interconnection of station batteries, followed by float voltage, cell voltage, cell resistance, strap resistance, temperature and specific gravity tests. Effects of temperature on battery capacity and cell voltage will also be discussed. Lunch provided.

ARC FLASH CLASS

December 18, 2018

8 Hrs. | \$400pp

This course will be taught by industry leaders in arc flash and arc flash PPE. This class will discuss the history of arc flash followed by the IEEE standards for arc flash calculations and implementation. We will also discuss how arc flash is relevant to utility personal, their system's calculations, and the specific PPE they need. This class will also cover the FR clothing needed to protect utility personal. Line Technicians, Line Foreman, Line Supervisors, Substation Technicians, Meter Technicians and Safety Trainers are encouraged to attend this workshop.

Lunch provided.

TROUBLE SHOOTING RESIDENTIAL SERVICE

May 8, 2019

8 Hrs. | \$400pp

The trouble shooting workshop class is designed to help technicians trouble shoot residential services. This class will focus on no power, half power, low voltage and open neutral scenarios. With the eight house trouble shooting lab, the students will get a hands on training experience. Customer service will also be addressed in the class. This class is designed for those who would like to have a better understanding on trouble shooting residential services. Line Technicians, Line Foreman, Line Supervisors, Meter Technicians and Safety Trainers are encouraged to attend this workshop. Lunch provided.

INTRODUCTION TO SEL 351 AND 751 RELAYS

DATE TBD

8 Hrs. | \$400pp

Students will learn fundamental procedures such as placing the relay in "One Shot", "Non Reclose" and "Hot Line Tag". The differences between one shot and hot line tag will be discussed and demonstrated by fault simulation. Identification and function of all front panel controls will be discussed. How to view real-time metering information, fault location and fault history will be presented. Students will be introduced to SEL communications software to view and retrieve information from SEL relays. Lunch provided.

**pp means per person

TO REGISTER: VISIT CORPORATETRAINING.NWTC.EDU & SEARCH FOR COURSE BY PROGRAM NAME