



2024 TRAINING CATALOG





TABLE OF CONTENTS

GENERAL INFORMATION

INSIDE SHERMCO UNIVERSITY	2
SAFETY COMPLIANCE SOLUTIONS	3
COMPUTER-BASED TRAINING	5

SAFETY TRAINING

ELECTRICAL SAFETY FOR QUALIFIED WORKERS	6
LAB SESSION - ELECTRICAL SAFETY FOR QUALIFIED WORKERS	8
ELECTRICAL SAFETY FOR NON-ELECTRICAL PERSONNEL	9
ELECTRICAL SAFETY REFRESHER	10
ELECTRICAL SAFETY FOR MANAGERS	11
ELECTRICAL SAFETY FOR UTILITIES	12
WIND ENERGY TECHNICIAN SAFETY	13

MAINTENANCE TRAINING

INDUSTRIAL PLANT ELECTRICAL MAINTENANCE	14
LOW & MEDIUM-VOLTAGE CIRCUIT BREAKER MAINTENANCE & TESTING	15
SUBSTATION MAINTENANCE 1: (CIRCUIT BREAKERS, BATTERIES & GROUNDING)	16
SUBSTATION MAINTENANCE 2: (TRANSFORMERS & RELAYS)	17
SPlicing & TERMINATION OF MEDIUM-VOLTAGE CABLES	18
TESTING AND MAINTAINING POWER TRANSFORMERS	19

GENERAL TECHNICAL TRAINING

GROUNDING AND BONDING	20
BASIC ELECTRICAL FUNDAMENTALS	21
BASIC ELECTRICAL TECHNICAL SKILLS	22
TROUBLESHOOTING & ELECTRICAL PRINT READING	23
NATIONAL ELECTRICAL CODE	24
NFPA 70B (Virtual)	25



INSIDE SHERMCO UNIVERSITY

As a NETA-certified test company, Shermco Industries has the expertise to show you how it's done the right way—the safe way. Our instructors include NETA-certified technicians, industry-leading engineers and other qualified personnel who are current in the field they are teaching. If quality of training is important to you and your work practices, go with professionals. We are here for your safety.

OPEN ENROLLMENT CLASSES

Training technicians and other employees are the key way to keep everyone safe and up-to-date on all technical industrial regulations and skills. Shermco is here to make sure that instructor lead and hands-on training given is not only relevant but also covers each technical aspect spanning the industry. For your convenience we schedule classes at our training facilities across the US.

ON-SITE TRAINING

Shermco has fully developed training programs that we can bring to you. Most courses are available at your job site as well as in open-enrollment classes. Many classes can be customized to customer-specific equipment and devices. Our onsite training programs provide the most effective hands-on training experience at very cost-efficient rates. The Benefits of On-Site Training:

- We train around your schedule.
- Modified classes to address your specific needs.
- Address your company's systems and equipment.
- Personnel available on site for emergencies.
- Consistency in your personnel training.

COMPUTER-BASED COURSES

Do you have technicians who require basic skills training or refresher training? We have something that may be of interest. We provide web-based training. These are not intended to be full-fledged training courses, nor will they take the place of our hands-on courses. What these web-based programs will do is provide that "tune-up" needed once your technicians and engineers have had hands-on training, but maybe have not had the opportunity to perform it often enough to be proficient.



SAFETY COMPLIANCE SOLUTIONS

OSHA standards require that employers adopt certain practices, means, methods or processes reasonably necessary to protect workers on the job. It is the responsibility of employers to become familiar with standards applicable to their establishments, to eliminate hazardous conditions to the extent possible, and to comply with the standards. Team Shermco is available to assist you in this effort.

As a field service operation, we have an advantage over most engineering and consulting firms in that not only do we provide information to our customers related to electrical safety and system operations, we actually deal with and implement those same issues within our own organization.

Additionally, members of our staff are actively involved in electrical standards, including committee membership participation in NFPA 70E (Standard for Electrical Safety in the Workplace), NFPA 70 (National Electrical Code), NFPA 70B (Recommended Practice for Electrical Equipment Maintenance), the IEEE IAS Electrical Safety Workshop, and other industry-related committees and organizations. Services available include the following:





SITE SAFETY ASSESSMENT/AUDIT

Electrical equipment presents a unique set of safety hazards that must be addressed to minimize potential injury, prevent loss of life and protect property. Unlike an audit that looks for NEC violations, the Site Safety Assessment is intended to determine whether the policies, procedures, training and work practices are adequate to meet OSHA, MSHA and NFPA 70E requirements. Weaknesses and strengths of your existing electrical safety program (ESP) and management controls are evaluated and a report is delivered that outlines what steps should be taken and helps prioritize the findings. A cross-section of workers and supervisors are interviewed to determine their understanding of regulatory requirements and safe work practices, also. This program incorporates the ESP Review, as well.

ARC FLASH STUDY

Arc-flash hazard studies determine the hazard distance and amount of incident energy that can occur in electrical equipment. These studies are used to determine what level of protective gear workers should wear when working on or near energized electrical equipment. Arc-flash studies are performed in accordance with ANSI/IEEE Standard 1584 (IEEE Guide for Performing Arc-Flash Hazard Calculations) and NFPA 70E (National Fire Protection Association, Standard for Electrical Safety in the Workplace).

ELECTRICAL SAFETY PROGRAM REVIEW

Shermco will review your electrical safety program for conformance with existing consensus standards: OSHA and MSHA regulations. Our objective is to ensure that processes and procedures are in place such that company personnel and outside servicing workers (subcontractors, etc.) are apprised of site hazards, PPE requirements, safe work practices, and emergency/evacuation procedures. This includes evaluating your complete written Electrical Safety Program and providing a full report upon completion.

ELECTRICAL SAFETY PROGRAM DEVELOPMENT

Electrical safety is addressed by many regulatory agencies. Every site should have a comprehensive electrical safety program, including arc-flash studies and written lock-out procedures. Shermco can help you develop and implement a comprehensive program to ensure safe work practices and compliance. Electrical Safety Program (ESP) elements include: purpose and policy; responsibilities; employee training requirements; inspections and audit standards; equipment standards; standard operating procedures for electrical work; personal protective equipment requirements; and labels and signs.



COMPUTER-BASED COURSES

ADD CONVENIENCE TO TRAINING PROGRAMS

Our computer-based courses are developed to supplement our hands-on instructor-led training. These online courses contain robust modules that are packed with information on the topics listed below.

BUNDLE TO DESIGN THE CURRICULUM FOR SPECIFIC TRAINING REQUIREMENTS

AC Motor Theory	Medium-Voltage Cable Testing & Diagnostics (3-part series)
AC Motor Types	Motor Starting Methods
AC Reactive Elements: Power Factor Correction	Protective Relays
Arc Flash Mitigation Techniques	Sf6 Switch Operation & Maintenance
Battery Maintenance & Testing	System Grounding Methods
Cable Splicing & Termination	Transformer: Power Factor & Tip Up Testing (2-part series)
Circuit Breaker Maintenance & Testing	Transformer Testing: Oil Tests
Construction & Failure Mechanisms	Transformer Testing: Dissolved Gas Analysis
DC Motors	Transformer Testing: Sweep Frequency Response Analysis
Electric Motors	Transformer Testing: Turns Ratio Testing
Electrical Power Distribution Systems	Transformer Testing: Winding Resistance Measurements
Electrical Safety Refresher	Transformers: Demagnetization of Power
Fundamentals of Electricity (7-part series)	Transformer Cores
Grounding & Bonding	Transformers: Excitation Current Test (2-part series)
Introduction to Circuit Breakers	Understanding Time Current Curves
Low & Medium-Voltage Switches	Working Principles of a Transformer
Medium-Voltage Cable Construction	



Electrical Safety for Qualified Electrical Workers	TUITION
2 DAY (16-hours) - 1.6 Continuing Education Units	\$850.00
<p>COURSE DESCRIPTION: Designed for all maintenance and testing personnel who work on or near electrical equipment. This seminar meets and exceeds the basic OSHA mandated electrical safety training. All of the concepts of electrical safety are carefully explained in both classroom and hands-on sessions. These assure that the skills and knowledge can be demonstrated to meet the OSHA requirements. The basic class and lab is primarily focused on applications below 600 volts, but an optional one day lab session is available for understanding and demonstrating the special skills and knowledge required for medium voltage applications.</p>	
<p>Prerequisites: It is recommended but not mandatory that attendees should have some basic electrical training and field experience.</p>	
<p>Course Learning Objectives:</p> <ul style="list-style-type: none"> ▪ Recognize, understand and avoid electrical hazards and risks (shock, arc flash and arc blast) ▪ How to develop and implement a JSA/JHA to address hazards and plan the required steps needed to work safely on or near energized conductors and circuit components. ▪ Safe work practices for work on or near metal clad switchgear, substations, motor control centers, medium-voltage motor starters and facility electrical systems. ▪ How to place equipment in an electrically safe work condition and properly utilize lockout/tagout (LOTO) requirements. ▪ Proper selection, maintenance, testing, use and storage of PPE. Learn their purposes and limitations. ▪ How to inspect insulated tools and understand their limitations of use ▪ How to select and apply temporary grounds as well as specific equipment grounding hazards including step and touch potentials. ▪ How to use a transformer short circuit current/incident energy calculator and how to estimate incident energy under field work conditions. ▪ How to perform absence-of-voltage testing to ensure an electrically safe work condition. ▪ Review OSHA Electrical Safety Related Work Practice regulations (29CFR 1910.311-.335 as well as Articles 110, 12 and 130. ▪ Understand the current utilization of NFPA 70E and the annex tables. Seminar-based program with round-table discussions. 	



2024 CLASS SCHEDULE: Electrical Safety for Qualified Electrical Workers

DALLAS, TX	AUSTIN, TX	VIRTUAL CLASS
January 9-10, 2024	April 16-17, 2024	January 9-10, 2024
February 6-7, 2024	July 16-17, 2024	February 6-7, 2024
March 5-6, 2024	October 22-23, 2024	March 5-6, 2024
April 9-10, 2024	HOUSTON, TX	April 9-10, 2024
May 7-8, 2024	March 19-20, 2024	May 7-8, 2024
June 4-5, 2024	May 21-22, 2024	June 4-5, 2024
July 16-17, 2024	July 23-24, 2024	July 16-17, 2024
August 13-14, 2024	September 24-25, 2024	August 13-14, 2024
September 10-11, 2024	November 19-20, 2024	September 10-11, 2024
October 15-16, 2024	NEW ORLEANS, LA	October 15-16, 2024
November 19-20, 2024	May 7-8, 2024	November 19-20, 2024
December 3-4, 2024	October 15-16, 2024	December 3-4, 2024



Lab Session: Electrical Safety for Qualified Electrical Workers		TUITION
1 DAY (8-hours) - 0.8 Continuing Education Units		\$575.00
<p>COURSE DESCRIPTION: Technicians and supervisors are often hesitant to perform tasks on medium-voltage equipment without some prior training or experience. This one-day lab session pulls all the pieces together for planning and executing specific tasks on medium-voltage energized equipment. A planning session is followed by hands-on practice in Shermco’s training substation under the supervision of our field-experienced instructors.</p>		
<p>Prerequisites: Electrical Safety for Qualified Electrical Workers training course.</p>		
<p>Course Learning Objective:</p> <ul style="list-style-type: none"> ▪ Focusing on medium-voltage applications ▪ How to assemble all the components of an electrical safety program into a practical job plan ▪ Hazard identification and risk assessment ▪ Absence of voltage testing of medium-voltage switchgear ▪ Grounding of medium-voltage switchgear ▪ Changing medium-voltage air-switch fuses ▪ Inserting and removing (racking) medium-voltage circuit breakers ▪ Inspection of PPE and arc-rated clothing 		
<p>2024 CLASS SCHEDULE: Lab Session: Electrical Safety for Qualified Electrical Workers</p>		
January 11, 2024 – Dallas TX	May 9, 2024 – Dallas TX	September 12, 2024 – Dallas TX
February 8, 2024 – Dallas TX	June 6, 2024 – Dallas TX	October 17, 2024 – Dallas TX
March 7, 2024 – Dallas TX	July 11, 2024 – Dallas TX	November 21, 2024 – Dallas TX
April 11, 2024 – Dallas TX	August 15, 2024 – Dallas TX	December 5, 2024 – Dallas TX



Electrical Safety for Non-Electrical Personnel (Virtual)	TUITION
1 DAY (8-hours) - 0.8 Continuing Education Units	\$550.00

COURSE DESCRIPTION: Virtually every worker on an industrial or commercial job site works with or uses electrically-powered equipment. Most of these workers have no concept of the hazards they could possibly be exposed to by performing common, everyday tasks. Jewelry contacting energized components, overstressed power strips, coffee pots and heaters placed into the workplace all can increase the risk to the employee and to production if the worker is not aware of the potential issues involved. This course covers common situations that could place the non-electrical worker into dangerous situations. This course is primarily designed to meet the training requirements in NFPA 70E Section 110.2(A)(1)(C)(2).

Prerequisites: No Prerequisite

Course Learning Objective:

- Review of electrical hazards, their causes and the potential for injuries and fatalities.
- Understand how to avoid these hazards.
- Common situations that can increase risk to workers.
- OSHA’s electrical safety-related work practices regulation as it applies to non-electrical personnel.
- Understand electrical LOTO and the Safe Work Zone.
- Understand applicable OSHA regulations for non-electrical workers.
- Understand and apply NFPA 70E requirements for unqualified persons.
- Understand the safe approach distances for shock, arc-flash, arc-blast and the purpose of a safe work zone.

2024 CLASS SCHEDULE: Electrical Safety for Non-Electrical Personnel (Virtual)

January 15, 2024	May 13, 2024	September 16, 2024
February 12, 2024	June 10, 2024	October 14, 2024
March 11, 2024	July 15, 2024	November 11, 2024
April 15, 2024	August 12, 2024	December 2, 2024



Electrical Safety Refresher (Virtual)		TUITION
1 DAY (8-hours) - 0.8 Continuing Education Units		\$550.00
<p>COURSE DESCRIPTION: This one-day class is designed for those who have previously met the OSHA mandated training requirements of NFPA 70E and need to be re-certified. It is a concise review of the concepts and practices required for safe electrical work. This course is designed to meet the training requirements in NFPA 70E Section 110.2(D)(3).</p>		
<p>Prerequisites: Attendees should have completed OSHA-mandated electrical safety training (Electrical Safety for Qualified Electrical Workers class or equivalent).</p>		
<p>Course Learning Objective:</p> <ul style="list-style-type: none"> ▪ Electrical hazards and safety procedures for work on metal-clad switchgear, substations, motor control centers and facility electrical systems. ▪ Proper selection, maintenance and use of required personal protective equipment (PPE). ▪ Energized and de-energized work policy and lockout/tagout (LOTO) requirements. ▪ Safe use of portable electrical equipment, including inspection and testing. ▪ Review of OSHA Electrical Safety-Related Work Practice regulations (29CFR1910.331-.335) as well as Articles 110, 120 and 130 of the NFPA 70E 		
<p>2024 CLASS SCHEDULE: Electrical Safety Refresher (Virtual)</p>		
January 17, 2024	May 15, 2024	October 2, 2024
February 14, 2024	June 19, 2024	November 6, 2024
March 3, 2024	July 18, 2024	December 11, 2024
April 3, 2024	August 28, 2024	



Electrical Safety for Managers (Virtual)		TUITION
1 DAY (8-hours) - 0.8 Continuing Education Units		\$550.00
<p>COURSE DESCRIPTION: As is often the case, supervisors, managers, and engineers who are responsible for plant maintenance are not actually the individuals performing hands-on maintenance operations. However, it is critical that they understand workplace safety policies and regulations so they can plan for the direction and training requirements of maintenance staff and assure that proper PPE, LOTO and other safety procedures are well understood and followed.</p>		
<p>Prerequisites: No prerequisites</p>		
<p>Course Learning Objective:</p> <ul style="list-style-type: none"> ▪ How electrical hazards in the can affect your personnel, your company and those responsible for electrical workers. ▪ Recognize electrical safety hazards and plan a course of action to address each one. ▪ OSHA regulations and NFPA 70E requirements for taking specific measures to prevent electrical hazards from causing injury or death. ▪ Electrical hazard awareness and recognition. ▪ Managing liability created by electrical hazards. ▪ Designing and implementing an Electrical Safety Program (ESP) including policies, safe work procedures and permits, hazard analysis, risk assessments and reduction, training, personal protective equipment (PPE) and other written program documents. ▪ Performing an electrical hazard/risk analysis. ▪ Using the NFPA 70E to interpret hazard/risk category classification (HRC) of a given task and assure adequate PPE. ▪ How to incorporate changes implemented by the NFPA 70E update. ▪ Identify the steps needed to protect employees who work on or near energized parts. 		
<p>2024 CLASS SCHEDULE: Electrical Safety for Managers (Virtual)</p>		
January 19, 2024	May 17, 2024	September 20, 2024
March 15, 2024	July 19, 2024	November 15, 2024



Electrical Safety for Utilities (Virtual)		TUITION
2 DAYS (16-hours) - 1.6 Continuing Education Units		\$830.00
<p>COURSE DESCRIPTION: Electrical utility workers are exposed to live energy hazards every day, often at high voltages. Understanding the impact of these hazards and implementing the best practices for managing projects and tasks is critical to the safety of both personnel and equipment. This hands-on course is designed to address those special requirements and techniques.</p>		
<p>Prerequisites: Attendees should have basic electrical knowledge. Field experience with generation, transmission, and distribution systems operating above 600 volts is desired but not required.</p>		
<p>Course Learning Objective:</p> <ul style="list-style-type: none"> ▪ Electrical hazard awareness including the relationship between electrical hazards and personal injury or death. ▪ Work rules such as determining safe approach distances for exposed energized conductors and components based on OSHA’s 29CFR1910.269, and National Electrical Safety Code (NESC) ▪ The proper use of special precautionary techniques, personal protective equipment (PPE), insulating and shielding materials and insulated tools for working on or near exposed energized parts of electric equipment based on OSHA and NESC. ▪ How to inspect PPE such as rubber insulating gloves, hot sticks, rubber blankets, hard hats, face shields and arc flash clothing, grounding devices. ▪ Absence-of-voltage testing using contact and non-contact devices. ▪ Lecture augmented with discussions; lab time (written and hands-on). 		
<p>2024 CLASS SCHEDULE: Electrical Safety for Utilities (Virtual)</p>		
February 15, 2024	August 15, 2024	
May 16, 2024	November 14, 2024	



Wind Energy Technician Safety (Virtual)		TUITION
3 DAYS (24-hours) – 2.4 Continuing Education Units		\$1,025.00
<p>COURSE DESCRIPTION: A practical and intensive training program designed to enhance attendees’ safety while working on or near a collector system and substation equipment. Safety training requirements and safe work practices for electrical workers are covered using the NFPA 70E, NESC, and Fed OSHA regulations including 29CFR1910.331-.335 and selected parts of 29CFR1910.269. PPE covered in this class includes hard hats, safety glasses, arc-rated vs. FR clothing, arc-rated flash suits, insulated hand tools, live-line tools, rubber insulating gloves and rubber insulating blankets. Classroom lectures will be supplemented with tests and exercises intended to reinforce best practices for operations and safety.</p>		
<p>Lab Time and Prerequisites: Basic electrical knowledge.</p>		
<p>Course Learning Objective:</p> <ul style="list-style-type: none"> ▪ Equipment overview & electrical safety basics. ▪ Hazards of electricity. ▪ Personal protective equipment (PPE) & inspecting PPE. ▪ Medium-voltage detection exercise pad-mounted transformer isolation exercise substation switching exercise. ▪ Arc flash and shock boundaries. ▪ Safeguards for personnel protection & job hazard/safety analysis. ▪ Placing equipment in an electrically - safe work condition. ▪ Hazards of de-energized equipment. ▪ Testing for the absence of voltages. 		
<p>2024 CLASS SCHEDULE: Wind Energy Technician Safety (Virtual)</p>		
January 23-25, 2024	April 9-11, 2024	August 6-8, 2024
February 6-8, 2024	June 4-6, 2024	October 8-10, 2024



Industrial Plant Electrical Maintenance		TUITION
4.0 DAYS (32-hours) – 3.2 Continuing Education Units		\$1,420.00
<p>COURSE DESCRIPTION: This course covers what maintenance personnel and managers should know about electrical maintenance and how it affects plant reliability. The maintenance and testing required for common plant devices, including transformers, protective relays, circuit breakers, cubicle maintenance, motors and motor controls is covered in detail. Based on the NFPA 70E or B and ANSI/NETA Maintenance Testing Specifications, this intensive training program provides the latest information on maintaining and testing electrical power system equipment, including what to do, when to do it and interpreting test results.</p>		
<p>Prerequisites: Students should have basic electrical training. Some field experience is recommended but not mandatory.</p>		
<p>Course Learning Objective:</p> <ul style="list-style-type: none"> ▪ Low- and medium-voltage circuit breakers. ▪ Motor maintenance ▪ Switches and disconnects. ▪ Transformer maintenance and testing. ▪ How to interpret results and trend analysis. ▪ How to improve plant reliability through common-sense approaches to operation and maintenance. ▪ How to lower operation and maintenance cost. ▪ How maintenance planning can reduce unscheduled downtime. ▪ Hands-on (~40%) training program augmented with round-table discussions. 		
<p>2024 CLASS SCHEDULE: Industrial Plant Electrical Maintenance</p>		
February 27-March 1, 2024 –Dallas TX	June 25-28, 2024 – Dallas TX	October 29-Nov. 1, 2024 – Dallas TX
April 30-May 3, 2024 – Dallas TX	August 27-30, 2024 – Dallas TX	



Low to Medium Voltage Circuit Breaker Maintenance & Testing		TUITION
3.5 DAYS (24-hours) – 2.8 Continuing Education Units		\$1,420.00
<p>COURSE DESCRIPTION: Many industrial customers choose to perform general testing and maintenance on incoming utility substations and downstream substations within the plant perimeters. This class provides the information and hands-on training to test and maintain most of the major components of the substation except for the main transformer and protective relays.</p>		
<p>Prerequisites: Basic electrical training, some field experience and basic knowledge of switchgear.</p>		
<p>Course Learning Objective:</p> <ul style="list-style-type: none"> ▪ Theory, construction, and operation of common types of medium-voltage metal-enclosed switchgear and circuit breakers, including air-magnetic and vacuum. ▪ How to interpret ratings and nameplate data and identify breaker ratings and limitations. ▪ Understand how medium-voltage circuit breakers operate, and know the primary causes of failure. ▪ Safety requirements when operating, racking, testing or maintaining circuit breakers. ▪ Required testing and maintenance of medium-voltage metal-enclosed circuit breakers and switchgear in accordance with ANSI/NETA MTS. ▪ Tests commonly performed on circuit breakers and their associated switchgear. ▪ How to maintain batteries in accordance with ANSI/NETA MTS. ▪ Ground testing theory and interpreting test results in accordance with ANSI/ NETA MTS 		
<p>Hands-on Lab Session:</p> <ul style="list-style-type: none"> ▪ Racking circuit breakers. ▪ Perform and evaluate common circuit breaker electrical tests including insulation resistance, DC overpotential, contact resistance, insulation power factor and timing utilizing equipment from a variety of manufacturers. ▪ Perform routine maintenance on medium-voltage air and vacuum circuit breakers. ▪ Perform clamp-on ground test and interpret the results. ▪ Test and evaluate battery systems. 		
<p>2024 CLASS SCHEDULE: Low to Medium Voltage Circuit Breaker Maintenance & Testing</p>		
January 16-19, 2024 – Dallas, TX	May 14-17, 2024 – Dallas, TX	September 17-20, 2024 – Dallas, TX
March 12-15, 2024 – Dallas, TX	July 16-19, 2024 – Dallas, TX	November 12-15, 2024 – Dallas, TX



Substation Maintenance I: Breakers, Batteries & Grounding		TUITION
4.0 DAYS (32-hours) – 3.2 Continuing Education Units		\$1,760.00
<p>COURSE DESCRIPTION: This class provides the information and hands-on training to test and maintain most of the major components of the substation except for the main transformer and protective relays. It includes Hands-on (~40%) training augmented with round-table discussions.</p>		
<p>Prerequisites: Basic electrical training, some field experience and basic knowledge of switchgear.</p>		
<p>Course Learning Objective:</p> <ul style="list-style-type: none"> ▪ Theory, construction and operation of common types of mediumvoltage metal-enclosed switchgear and circuit breakers, including air-magnetic and vacuum. ▪ Interpret ratings and nameplate data to identify breaker ratings and limitations. ▪ Understand how med-voltage circuit breakers operate and know the causes of failure. ▪ Safety requirements when operating, racking, testing or maintaining breakers. ▪ Required testing and maintenance of medium-voltage metal-enclosed circuit breakers, and switchgear in accordance with ANSI/NETA MTS. ▪ Tests commonly performed on circuit breakers and their associated switchgear. ▪ Maintain station batteries in accordance with ANSI/NETA MTS. ▪ Ground testing theory and interpreting test results in accordance with ANSI/ NETA MTS. ▪ How to download and distribute Schweitzer (SEL) relay event files. 		
<p>Hands-on Lab Session:</p> <ul style="list-style-type: none"> ▪ Racking circuit breakers. ▪ Perform and evaluate common circuit breaker electrical tests including insulation resistance, DC overpotential, contact resistance, insulation power factor and timing utilizing equipment from a variety of manufacturers. ▪ Perform routine maintenance on medium-voltage air and vacuum circuit breakers. ▪ Perform clamp-on ground test and interpret the results. ▪ Test and evaluate battery systems. ▪ Perform fall-of-potential ground test and interpret results. 		
<p>2024 CLASS SCHEDULE: Substation Maintenance I: Breakers, Batteries & Grounding</p>		
February 13-1, -2024 – Dallas TX	June 11-14, 2024 – Dallas TX	October 15-18, 2024 – Dallas TX
April 16-19, 2024 – Dallas TX	August 13-16, 2024 – Dallas TX	December 3-6, 2024 – Dallas TX



Substation Maintenance II: Transformers and Relays		TUITION
4.0 DAYS (32-hours) – 3.2 Continuing Education Units		\$1,760.00
<p>COURSE DESCRIPTION: This course is designed to introduce the design and operation of these large three-phase transformers including how to test and maintain them for maximum reliability. It will also include how to test a selection of substation protective relays, how to interpret the results of those tests and how to properly maintain the relay components.</p>		
<p>Prerequisites: Basic electrical training, some field experience and basic knowledge of switchgear.</p>		
<p>Course Learning Objective:</p> <ul style="list-style-type: none"> ▪ Theory, construction and operation of three-phase power transformers. ▪ How to interpret ratings and nameplate data. ▪ Required testing and maintenance of dry-type and liquidinsulated power transformers in accordance with ANSI/NETA MTS. ▪ How to perform electrical testing of power transformers and interpret test results. ▪ Theory and operation of protective relays, including overcurrent, over/undervoltage and differential. ▪ What tests and maintenance are typically performed on the protective relays in accordance with ANSI/NETA MTS. ▪ How to interpret the test results. ▪ How to download and distribute Schweitzer (SEL) relay event files. ▪ Hands-on (~40%) training augmented with round-table discussions 		
<p>2024 CLASS SCHEDULE: Substation Maintenance II: Transformers and Relays</p>		
February 20-23, 2024 – Dallas TX	June 18-21, 2024 – Dallas TX	October 22-25, 2024 – Dallas TX
April 23-26, 2024 – Dallas TX	August 20-23, 2024 – Dallas TX	December 10-13, 2024 – Dallas TX



Splicing & Termination of Medium Voltage Cables		TUITION
4.0 DAYS (32-hours) – 3.2 Continuing Education Units		\$2,950.00
<p>COURSE DESCRIPTION: Modern cable construction and splicing materials rely on the technician’s ability to properly prepare cables and install cable components. Due to the high electrical stresses in these systems, many early life failures may be experienced if cables are not properly terminated or spliced. This course introduces modern cable splicing techniques and materials. We provide an in depth understanding of controlling electrical stresses and cable construction with more than half of the class time spent with hands-on splicing and terminating of cables.</p>		
<p>Prerequisites: Students should have basic electrical training, some field experience and basic knowledge of medium-voltage power systems.</p>		
<p>Course Learning Objective:</p> <ul style="list-style-type: none"> ▪ Basic electrical principles and construction of common types of medium-voltage cables. ▪ Cable construction basics. ▪ Cable theory ▪ Failure modes ▪ Cable preparation ▪ Testing and evaluation of power cables. ▪ Splices and terminations. ▪ Hands on lab sessions where students construct several types of splices and terminations. 		
<p>2024 CLASS SCHEDULE: Splicing & Termination of Medium Voltage Cables</p>		
March 5-8, 2024 – Dallas TX	July 9-12, 2024 – Dallas TX	November 5-18, 2024 – Dallas TX
May 7-10, 2024 – Dallas TX	September 10-13, 2024 – Dallas TX	



Testing and Maintaining Power Transformers		TUITION
4.0 DAYS (32-hours) – 3.2 Continuing Education Units		\$1,760.00
<p>COURSE DESCRIPTION: Designed to provide the latest information on maintenance and testing of pad-mounted power and distribution transformers and insulating liquids. This hands-on course provides detailed testing procedures and operational cautions technicians must have when performing field-testing of transformers. This course covers oil and dry-type transformers used in most commercial and utility-type installations. Beginning with safety, the course progresses through components, nameplate data, dc and ac testing, routine inspections, oil sampling and testing, all of which are covered in detail. Students will perform routine oil tests and all major electrical tests typically performed in the field.</p>		
<p>Prerequisites: Students should have basic electrical training, some field experience.</p>		
<p>Course Learning Objectives:</p> <ul style="list-style-type: none"> ▪ Describe the major categories and the most common designs of transformers. ▪ Identify power, instrument & distribution transformer components and auxiliary equipment. ▪ Demonstrate routine and diagnostic inspections and point out potential problems/ hazards. ▪ Interpret nameplate data and use the data to set up correct test procedures. ▪ Simulate appropriate tests to evaluate the condition and perform maintenance on transformers. ▪ Discuss oil sampling and the correct procedures to obtain samples. ▪ Summarize testing, drying, filling and filtering techniques and procedures. ▪ Explain gas sampling and testing. ▪ Discuss test results to troubleshoot transformer problems. ▪ Determine the dryness of insulation using safety precautions, proper tools, vendor manuals and/or drawings. 		
<p>2024 CLASS SCHEDULE: Testing and Maintaining Power Transformers</p>		
March 26-29, 2024 –Dallas TX	September 24-27, 2024 –Dallas TX	
June 25-28, 2024 –Dallas TX	December 17-20, 2024 –Dallas TX	



Grounding and Bonding		TUITION
3.0 DAYS (24-hours) – 2.4 Continuing Education Units		\$1,025.00
<p>COURSE DESCRIPTION: This course focuses on the grounding and bonding requirements contained in Article 250 of NEC®. Article 250 identifies grounding and bonding system methods. Specific topics that are addressed include, but are not limited to: definitions, grounded (neutral) conductor requirements, sizing equipment grounding conductors, equipment bonding jumpers, grounding electrode conductors, and main bonding jumpers; identifying types of grounding electrodes; requirements for multiple grounding electrodes; bonding requirements for non-electrical equipment; the purpose of impedance or resistance grounding; requirements for an isolated grounding system; and grounding and bonding requirements for the line side and the load side of the service disconnecting means.</p>		
<p>Prerequisites: No Prerequisite</p>		
<p>Course Learning Objectives:</p> <ul style="list-style-type: none"> ▪ Explain the fundamentals, basic principles, and requirements of grounding and bonding. ▪ Identify and utilize grounded conductors. ▪ Summarize ground-fault circuit interrupter requirements. ▪ Select the appropriate grounding system and discuss the implications. ▪ Outline grounding electrode systems and their requirements ▪ Describe the requirements for the installation of equipment grounding and bonding conductors. 		
<p>2024 CLASS SCHEDULE: Grounding and Bonding</p>		
January 9-11, 2024 – Virtual	May 7-9, 2024 – Virtual	September 10-12, 2024 – Virtual
March 5-7, 2024 – Dallas TX	July 9-11, 2024 – Dallas TX	November 5-7, 2024 – Dallas TX



Basic Electrical Fundamentals		TUITION
2.0 DAYS (16-hours) – 1.6 Continuing Education Units		\$995.00
<p>COURSE DESCRIPTION: Whether you are new to the industry or are taking on additional responsibilities for electrical maintenance, a solid knowledge of the basics is essential to understanding the operations, maintenance and safety of any facility or factory site. This is a hands-on practical introduction to those concepts and skills that serves as a prerequisite to further training and career enhancements for both technicians and managers.</p>		
<p>Prerequisites: None</p>		
<p>Course Learning Objective:</p> <ul style="list-style-type: none"> ▪ Fundamentals of matter, energy, and electricity. ▪ Direct current (DC) fundamentals, including Ohm’s Law and calculating voltage, current, resistance and power in the DC systems. ▪ Battery theory and operation. ▪ Alternating current (AC) fundamentals, including application of Ohm’s and Kirchoff’s Laws to single- and three-phase circuits. ▪ How AC is generated. ▪ Inductance, capacitance, and reactance. ▪ How transformers work. 		
<p>2024 CLASS SCHEDULE: Basic Electrical Fundamentals</p>		
February 12-13, 2024 – Dallas TX	June 10-11, 2024 – Dallas TX	October 14-15, 2024 – Dallas TX
April 15-16, 2024 – Dallas TX	August 12-13, 2024 – Dallas TX	December 9-10, 2024 – Dallas TX



Basic Electrical Technical Skills		TUITION
3.0 DAYS (24-hours) – 2.4 Continuing Education Units		\$1,025.00
<p>COURSE DESCRIPTION: A 3-day companion course to Basic Electrical Fundamentals, this course features a detailed, hands-on training regimen on the use of electrical testing equipment, electrical system trouble-shooting and interpretation of electrical drawings. These are the basic skills required by any technician to safely and efficiently maintain and operate electrical equipment.</p>		
<p>Prerequisites Attendees must have a solid understanding of basic electricity acquired through classroom/OJT or completion of Shermco’s Basic Electrical Fundamentals training program.</p>		
<p>Course Learning Objective:</p> <ul style="list-style-type: none"> ▪ How to use Digital Volt Ohm Meters (DVOMs) to safely test a variety of components. ▪ Interpret nameplates and data-plates of common electrical devices. ▪ Proper method for operating switches and circuit breakers. ▪ Explanation and use of overcurrent protective devices, moldedcase circuit breakers and low voltage power circuit breakers. ▪ Effectively troubleshoot electrical control and power circuits. ▪ The basic understanding of electrical drawings and prints. ▪ Safe work practices for voltage testing, megohmmeters and micro-ohmmeters. 		
<p>2024 CLASS SCHEDULE: Basic Electrical Technical Skills</p>		
February 14-16, 2024 – Dallas TX	June 12-14, 2024 – Dallas TX	October 16-18, 2024 – Dallas TX
April 17-19, 2024 – Dallas TX	August 14-16, 2024 – Dallas TX	December 11-13, 2024 – Dallas TX



Troubleshooting & Electrical Print Reading		TUITION
2.0 DAYS (16-hours) – 1.6 Continuing Education Units		\$850.00
<p>COURSE DESCRIPTION: This fundamental course was developed for technicians and managers who need to understand electrical power systems: how they are designed, what can go wrong and how to find the problem areas. Several types of drawings and schematics are explained, and hands-on exercises will demonstrate their practical use for basic troubleshooting.</p>		
<p>Prerequisites: Attendees should have basic electrical training. Some field experience is recommended but not mandatory.</p>		
<p>Course Learning Objectives:</p> <ul style="list-style-type: none"> ▪ Types of electrical system drawings, the basic layout and the purpose of each. ▪ Legends used on electrical drawings. ▪ Understanding and identify typical electrical symbols. ▪ Standard ANSI/IEEE device numbers. ▪ How circuits and devices interact with each other. ▪ To understand the “logic” functions in electromechanical control systems. ▪ To troubleshoot electrical problems using elementary diagrams, one-line diagrams and Schematics. ▪ To understand device functions and system operations such as circuit breaker and motor controls and transfer schemes. ▪ Hands-on (~30%) training program augmented with round-table discussions, and perform practical exercises using elementary diagrams, one-line diagrams and schematics. 		
<p>2024 CLASS SCHEDULE: Troubleshooting & Electrical Print Reading</p>		
January 23-24, 2024 –Dallas TX	May 21-22, 2024 –Dallas TX	September 24-25, 2024 –Dallas TX
March 19-20, 2024 –Dallas TX	July 23-24, 2024 –Dallas TX	November 19-20, 2024 –Dallas TX



2023 National Electrical Code (Virtual)		TUITION
3.0 DAYS (24-hours) – 2.4 Continuing Education Units		\$1,420.00
<p>COURSE DESCRIPTION: This course is designed to give new or experienced users of the National Electrical Code (NFPA70) practical experience in applying the rules in commercial and industrial applications. Through practical exercises, classroom instruction, and discussions, students will learn how to size conductors, motors, overcurrent protection and raceways for safe installations. Students will utilize chapters 1 through 4 of the Code book to become proficient in finding applicable sections for most applications. Chapter 9 tables are also covered so students can properly utilize them in everyday work situations. The practical exercises are designed to help students become familiar with the structure of the Code and how to quickly find the articles needed for common applications.</p>		
<p>Prerequisites: An understanding of basic electrical theory and practical field knowledge of electrical installations. This is not a basic or beginner’s NEC course.</p>		
<p>Course Learning Objectives:</p> <ul style="list-style-type: none"> ▪ Purpose, scope, and definitions of the NEC. ▪ Requirements for installations wiring and protection. ▪ Load calculations and overcurrent protection. ▪ Wiring methods, conductors, and Conductors in parallel. ▪ Underground installations. ▪ Raceway and box fill calculations. ▪ Conductors in parallel. ▪ Conductor ampacity correction and adjustment. ▪ Bonding and grounding Article 250. ▪ Switchboards, switchgear, and panelboards. ▪ Neutral conductor terminations. ▪ Motors, motor circuits, and controllers. 		
<p>2024 CLASS SCHEDULE: 2023 National Electrical Code (Virtual)</p>		
January 23-26, 2024	May 21-24, 2024	September 24-27, 2024
March 19-22, 2024	July 23-26, 2024	November 12-15, 2024



NFPA 70B (Virtual)		TUITION
2.0 DAYS (16-hours) – 1.6 Continuing Education Units		\$830.00
<p>COURSE DESCRIPTION: The NFPA 70B standard details comprehensive standards for electrical maintenance, with an emphasis on the following five areas:</p> <p>Electrical equipment: standards for maintaining all types of electrical equipment, including transformers, circuit breakers, and switchgear.</p> <p>Safety: guidance on identifying and mitigating electrical hazards.</p> <p>Training: the importance of training personnel responsible for maintenance tasks and emphasizing the need for ongoing education and certification.</p> <p>Maintenance procedures: standards for conducting regular maintenance, such as visual inspections, cleaning, lubrication, and testing.</p> <p>Maintenance documentation: standards requiring detailed records of all maintenance activities, including test results, repairs, and replacements to ensure compliance and facilitate continuous improvement.</p>		
<p>Prerequisites: An understanding of basic electrical theory and practical field knowledge of electrical installations. This is not a basic or beginner’s NEC course.</p>		
<p>2024 CLASS SCHEDULE: NFPA 70B (Virtual)</p>		
June 18-19, 2024	October 22-23, 2024	
August 20-21, 2024	December 17-18, 2024	



Shermco industries
One Line. One Company.

1. **ONLINE:** www.shermco.com/shop#courses
2. **CALL:** 972.793.5523
3. **FAX:** 972.793.5542
4. **EMAIL** Registration to: traininginfo@shermco.com
5. **MAIL** Registration form to:

SHERMCO Industries
2425 East Pioneer Drive
Irving, TX 75061

rharris@shermco.com

5 WAYS TO REGISTER

0765 - Reggie Harris

COURSE REGISTRATION FORM

PLEASE PRINT TO AVOID ANY ERRORS

COMPANY NAME _____

ADDRESS _____

CITY _____ STATE/PROV _____ ZIP CODE _____

WORK PHONE# (_____) _____ EXTENSION _____ FAX# (_____) _____

CONTACT NAME _____ PHONE (_____) _____

E-MAIL ADDRESS _____

COURSE NAME _____

COURSE DATE _____ COURSE LOCATION _____ TUITION \$ _____

Students you wish to enroll:

STUDENT NAME _____ E-mail _____

STUDENT NAME _____ E-mail _____

STUDENT NAME _____ E-mail _____

PAYMENT BY CREDIT CARD SECURITY CODE

AMERICAN EXPRESS _____ NAME (As it appears on the card) _____

MASTER CARD _____ CARD BILLING ADDRESS _____

VISA _____ CITY _____ STATE/PROV _____ ZIP CODE _____

CARD NUMBER _____

EXPIRATION DATE _____ SIGNATURE OF CARD HOLDER _____

PURCHASE ORDER # _____ ENCLOSED CHECK # PERSONAL COMPANY

Please do not make any airline reservations until you receive written confirmation.

COURSE FEES: Enrollment is not guaranteed until full payment is received. You will be placed on a waiting list if your registration does not include your payment. Payment should be made payable to Shermco Industries, Inc. in US dollars.

METHOD OF PAYMENT: Choose one of the following methods:

1. Purchase Order (copy must accompany registration form)
2. Check for the full amount
3. Visa, Mastercard or American Express

CONFIRMATION: Written confirmation will be emailed to you or person registering you, approximately 14 days prior to the first date of class. A map to the location of the class, info regarding hotel accomodation and other helpful information will accompany the confirmation letter.

All hotel reservation and charges, transportation arrangements and fares are the responsibility of the student. Students should not schedule return flights for earlier than two (2) hours after class ends.

CANCELLATION POLICY: Shermco's cancellation policy allows a full refund for cancellations more than ten (10) business days in advance of the class. Clients may substitute students at any time prior to the beginning of the class. Cancellations with less than ten (10) business days notice will result in a sixty percent (60%) refund of the tuition to cover expenses for which we have guaranteed payment.

CHANGES: Shermco reserves the right to cancel any class or make other changes in course content, schedule or facilities. Every effort will be made to provide prompt notification of any class cancellation and/or any other changes.