

Course name:	ELECTRICAL SKILLS 1
Short name:	ES1
Length:	240 hrs
Prerequisites:	Working skills in four-function math including whole numbers, signed numbers, decimals and knowledge of Algebra and right angle Trigonometry. (Remediation is available.)

Purpose

This course provides the knowledge and skills required to form the foundation for electrical training. It has an emphasis on relay control circuits. The trainee will design, install and analyze several electrical installations.

Description

This course is designed to give the skills necessary to effectively analyze and repair intermediate control circuits, power circuits, AC and DC motors.

Topics include:

- Electrical safety
- Conventional motor control
 - Input devices
 - Output devices
- Basic electrical principles
 - DC circuit analysis
 - AC relationships
 - Inductance
 - Capacitance
- Protection devices
 - Fuses
 - Overloads
- Three phase AC
- Wiring practices/projects
- Power supplies
- Basic electrical drawings
- Schematic interpretation
- Analyzing
 - Open circuits
 - Ground fault/short circuit
- Basic test equipment
- Transformers
 - Control circuit grounding

Course Objectives:

Upon successful completion of this course, the trainee will be competent in:

- Applying electrical theory to the practical application of electrical components.
- Analyzing power and control circuits and replacing defective components efficiently.
- Analyzing single and three phase motors.
- Drawing electrical schematics.
- Fabricating electrical panels from schematics.
- Assisting in the installation and start up of electrical equipment.

Course name:	ELECTRICAL SKILLS 2
Short name:	ES2
Length:	160 hrs
Prerequisites:	10 – 18 months of applying the concepts from ES1

Purpose

This course provides the skills necessary to effectively analyze and comprehend more complex electrical control circuits, power circuits, AC and DC motors.

Description

This course is a study of electrical theory, equipment technology, advanced electrical schematic interrelation and advanced circuit analysis.

Topics include:

- Electrical safety
- Conventional motor control
 - Input devices
 - Output devices
- Basic electrical principles
 - DC circuit analysis
 - AC relationships
 - Network analysis
- Protection devices
 - Fuses/overloads
 - Breakers
- Wiring practices
- Power supplies
- Electrical drawings
- Advanced AC/DC motors
- Circuit analysis and repair
 - Practical applications
- Transformers
 - Single phase
 - Three phase
- Advanced electrical principals
 - Three phase relationships
 - Power factor correction

Course Objectives:

Upon successful completion of this course, the trainee will be competent in:

- The knowledge of electrical safety.
- Analyzing complex AC and DC circuits.
- AC and DC motor theory and operation.
- Correct application of electrical protection devices.
- Analyzing motor control circuits.
- Interpreting electrical schematics.
- Three phase circuit analysis.

Course name:	ELECTRICAL HAND SKILLS
Short name:	EHS
Length:	80 hrs
Prerequisite:	ES1

Purpose

This course provides electrical hand skills training.

Description

This course is designed to give the skills necessary to effectively wire control systems, modify existing systems, fabricate as necessary, and bend and install electrical conduit.

Topics include:

- Panel layout
 - Back plane
 - Control station
- Drilling
- Tapping
- Wiring
 - Wiring practices
 - Wiring standards
- Conduit
 - Bending and correct installation of EMT
 - Installation of flexible liquid tight conduit
- Electrical Standards
 - Your Company's Electrical Standards
 - NFPA 79 (Electrical Standards for Industrial Machinery)

Course Objectives:

Upon successful completion of this course, the trainee will be competent in:

- Performing typical electrical fabrications (drilling, tapping, etc).
- Installing complex electrical circuits.
- Installing modifications to complex electrical circuits.
- Installing conduit applications using EMT and flexible conduit.
- Solder electrical connections.

Course name:	ELECTRICAL TROUBLESHOOTING
Short name:	ETS
Length:	80 hrs
Prerequisites:	ES1

Purpose

This course is designed to improve electrical troubleshooting methodology and skills.

Description

This course provides practical troubleshooting skills. Approximately 75% of the time is spent in a workshop/lab environment.

Topics include:

- Electrical safety
- Applied system troubleshooting
- Safety equipment
- Troubleshooting methods
- Electrical shock
- US/Canada electrical codes
- Test equipment
- Your company's standards
- Live electrical work methods
- Review of components and symbols
- Drawing and reading electrical schematics

Course Objectives:

Upon successful completion of this course, the trainee will be competent in:

- Working safely while analyzing and repairing both power and control circuits.
- Drawing and reading electrical schematics.
- Able to use VOM, ammeter, and meg-ohm-meter.

Course name: INTRODUCTION TO HIGH VOLTAGE

Short name: IHVM

Length: 40 hrs

Prerequisites: ES1

Purpose

This course provides an introduction to the theory, technology, and safety associated with power distribution in an industrial environment.

Description

This course instructs how to interact with or assist a trained power distribution technician. This is an introductory course and does not fully qualify an individual to perform all the tasks reviewed.

Topics include:

- Safety
 - Equipment lockout procedures
 - Power distribution equipment
- One-line diagrams
- Basic test equipment
- Low voltage
 - Circuit breakers
 - Switchgear
- Medium voltage
 - Circuit breakers
 - Switchgear
- Transformer maintenance
- Short circuit analysis
- System coordination
- Battery maintenance
- NFPA 70B code book

Course Objectives:

Upon successful completion of this course, the trainee will be competent in:

- Recognizing potential hazards and safety precautions.
- Working safely around power distribution.
- Assisting a trained power distribution technician.