



## TROUBLESHOOTING ELECTRICAL CONTROL

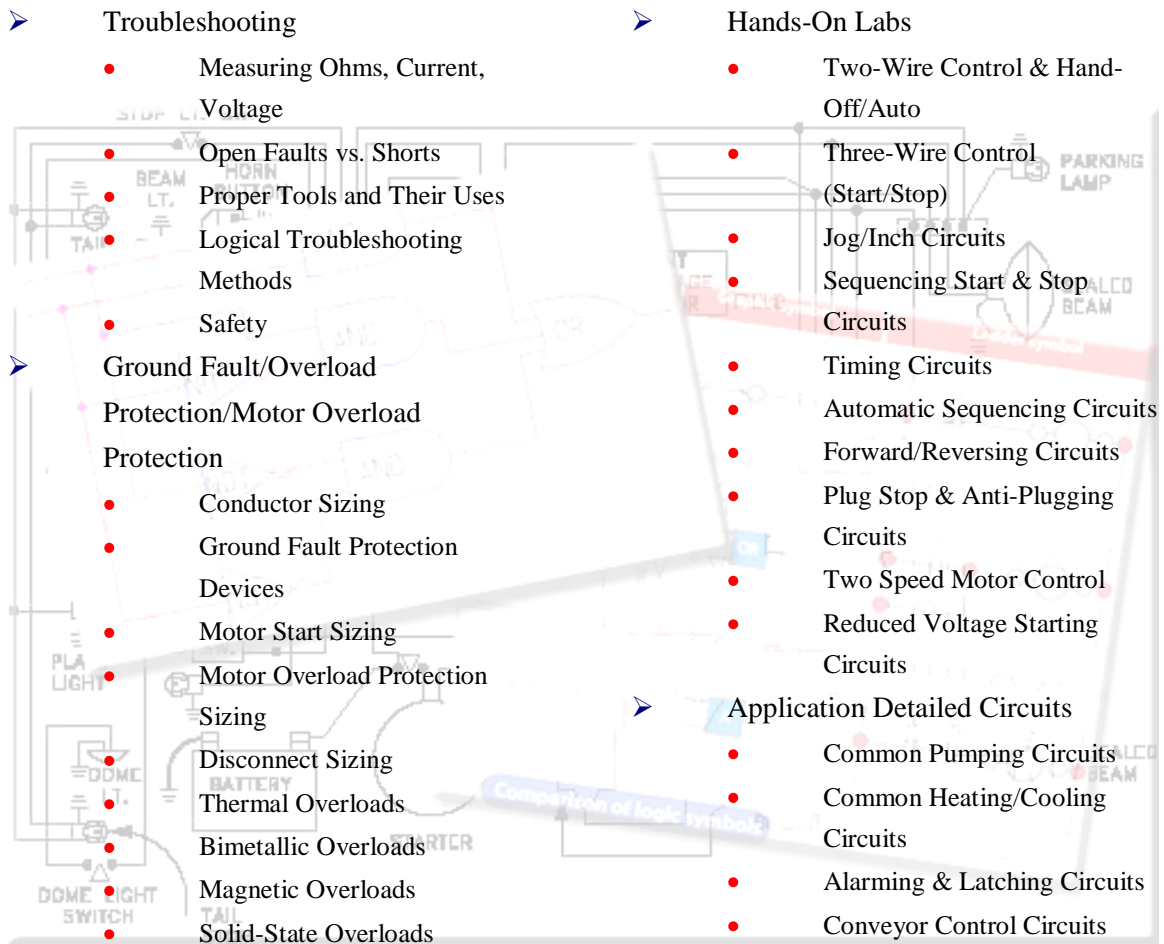
### CIRCUITS

#### Training Workshop

Industrial Training, Inc., provides on site, as well as centralized, troubleshooting electrical control circuits training. The intention of this course is to provide students with a working knowledge of practical and useful troubleshooting techniques. The benefits to maintenance, operations, and the company are lowered costs through higher efficiency.

The following outline gives an overview of the more detailed curriculum:

- Control Circuits (Ladder Diagrams)
  - Power Rails
  - Control Element Arrangement
  - Line & Wire Numbers
  - Tag Names
- Electrical Schematics
  - Power & Control Circuits
- Logical Circuits
  - AND/OR/NOT/Complex & Compound Circuits
- Basic Electrical Principles
  - Power Supplies
  - Electrical Flow
  - Loads
  - Switches
- Transformers
  - Magnetism
  - Induction
  - Turn Ratio
  - Primary/Secondary
  - Grounded vs. Floating Grounded
- Disconnecting Devices
  - Disconnects
  - Knife Switch
  - Circuit Breakers
- Control Elements, Switches, Symbology
  - Solid-State Relays
  - Timing Relays
  - Overload Relays
  - Relay Contact
- Supplementary Contract Symbols and Nomenclature
  - Breaks, Poles, Throws
  - Single/Double Break
  - Single/Double Pole
  - Single/Double Throw
- Manual/Automatic Switches
  - Selector Switches
  - Drum/Foot Switches
  - Push Buttons
  - Limit Switches
  - Proximity & Photo Switches
  - Temperature, Pressure, Flow & Float Switches
  - Motion Switches



Training is geared toward individual capability and ranges from the basics for the beginner to advanced training. This skills building method gives personnel the training needed to troubleshoot and maintain equipment in order to reduce costly downtime.