

## Course Information Form (CIF)

**Course Code:** ELX 113

**Course Title:** Conductors, Cables, Wireways, and Math for the Trades

**Department:** Applied Sciences and Technologies

**Effective Date:** Summer 2026

**PCS Code:** 1.2 - Occupational/Technical Instruction

**CIP Code:** 46.0302

**Repeatability:** 0

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### Credit Hours

**Catalog Notation:** 0.5-1-1

**Credit Hour Distribution:**

Lecture: 0.5

Lab: 1

Clinical: 0

**Total: 1**

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### General Course Information

#### Catalog Description

Conductor identification, sizing, color coding, and types; conduit types, sizing, and general installation guidelines.

#### General Course Objectives

- The student should be able to identify the various types of wire and cabling and articulate how they are selected, sized, and installed for various applications.
- Students should be able to identify the main types of conduit and wireways, describe how they are selected and sized for any given application, and demonstrate the ability to install these materials.

#### Minimum Placement Levels

| English | Reading | Math                     |
|---------|---------|--------------------------|
| None    | None    | Placement out of MAT 060 |

#### Prerequisites

Credit in ELX 112

#### Methods of Evaluation

Students will be given a minimum of 2 quizzes, 2 labs, 1 final exam, and 1 lab practical exam.

#### Instructional Materials and Additional Supplies

Illustrated Guide to the National Electrical Code, 8th Edition. Charles R. Miller. Cengage Publishing.

978-0357371527

National Electrical Code 2020, 978-1455922970

Safety glasses

## Course Content

### General Learning Outcomes (GLOs)

- Reasoning and Inquiry: Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.

### Course Segments and Student Learning Outcomes

| Course Segment                               | Learning Outcomes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Lecture Hours | Lab Hours | Clinical Hours |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------|----------------|
| Conductors and Cabling                       | <ol style="list-style-type: none"> <li>Define the physical and electrical properties and characteristics of various conductors (articles 310-342).</li> <li>Demonstrate ability to utilize tables to determine conductor size and type for given applications (articles 310-342).</li> </ol>                                                                                                                                                                                                                                                                            | 2             | 3         | 0              |
| Conduits and Wireways                        | <ol style="list-style-type: none"> <li>Describe various conduit, wireway, and raceway types, explain the criteria (location, environment type, etc.) with which they are selected, and describe how each type may be installed into an electrical system (articles 344-392).</li> <li>Demonstrate ability to utilize tables to determine conductor fill capacities depending on conduit and conductor types. (articles 344-392).</li> <li>Demonstrate ability to select and install conduit and wireways based on criteria such as location and environment.</li> </ol> | 2             | 3         | 0              |
| Working with Conductors, Cables, and Conduit | <ol style="list-style-type: none"> <li>Identify connectors and fittings for different conductors, cables, and conduit types and the requirements regarding their installation (articles 244-392).</li> <li>Demonstrate ability to identify and select the correct tools for conduit bending and installation and wire pulling (articles 344-392, supplemental information).</li> <li>Demonstrate the proper procedure(s) to perform conduit threading, bending, and connecting utilizing hand, pneumatic, and power benders and threaders.</li> </ol>                   | 2             | 4         | 0              |
| Introduction to Trade Math Applications      | <ol style="list-style-type: none"> <li>Demonstrate how to use trade mathematics to determine bend angles for the installation of conduit and determine the radius of a bend.</li> <li>Demonstrate ability to read and utilize measuring devices such as levels, linear measuring tools, and meters.</li> </ol>                                                                                                                                                                                                                                                          | 1.5           | 5         | 0              |

#### Total Contact Hours

| Lecture Hours | Lab Hours | Clinical Hours |
|---------------|-----------|----------------|
| 7.5           | 15        | 0              |