Course Information Form (CIF)

Course Code: ELX 117

Course Title: Blueprints, Circuits, Feeders, and Taps

Department: Applied Sciences and Technologies
PCS Code: 1.2 - Occupational/Technical Instruction
CIP Code: 46.0302
Repeatability: 0

Effective Date: Summer 2026

Credit Hours

Catalog Notation: 1-2-2
Credit Hour Distribution:

Lecture: 1	Lab: 2	Clinical: 0	**Total: 2**

General Course Information

Catalog Description

Continued electrical blueprint reading and writing, electrical circuit wiring standards. Transformers, feeders, and taps; industrial and higher-level wiring considerations.

General Course Objectives

The student should be able to describe the software and equipment involved in the preparation of blueprints and understand the relationship between electrical drawings, architectural drawings, and other trade drawings. They should also be able to read and understand the various types of electrical drawings, their symbols, and common abbreviations. They should also be able to use a schematic to trace a circuit for troubleshooting and repair, and demonstrate ability to size, connect, and install transformers for single and three-phase applications.

Minimum Placement Levels

English	Reading	Math
None	None	Placement out of MAT 060

Prerequisites

Credit in ELX 116

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

Electrical Wiring Residential, 21st Edition. Millin, Simmons & Vigstol. Cengage Publishing. 978-0357766965
Illustrated Guide to the National Electrical Code, 9th Edition. Charles R. Miller. Cengage Publishing. 978-0357766712
National Electrical Code 2020, 978-1455900008
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
Reading Blueprints and Symbology	1. Describe how blueprints are designed and their role in construction and other trade prints as part of a larger picture. 2. Define common symbols used in electrical drawings and prints. 3. Demonstrate the ability to systematically trace a wiring circuit on a blueprint, perform testing based on this information, and initiate repairs. 4. Demonstrate how to properly perform edits (redlining) on blueprints when modifications are made.	4	8	0
Blueprint Writing and Visualization	1. Describe the four main methods of print writing (single line, ladder logic, wiring schematics, and electrical plan) and how they are used differently in residential, commercial, and industrial applications. 2. Demonstrate the ability to visualize a circuit based on a desired result and draw these blueprints with correct structure, layout, and symbology. 3. Demonstrate the ability to determine device placement on a print in accordance with NEC regulations.	3	6	0
Electrical Circuit Wiring	1. Define, describe, and contrast various circuit types and how connections are made; apply NEC terms and practices in further understanding electrical calculations. 2. Describe the difference between feeder and branch circuits and how wiring is performed depending on the application. 3. Demonstrate the ability to calculate current in ungrounded, grounded, and service entrance conductors, and how to size them appropriately.	4	8	0
Transformers, Feeders, and Taps	1. Explain how single and three-phase transformers operate, their main components, and how they are rated. 2. Describe how ratios, available voltages, and current calculations are used to determine feeder and tap sizes. 3. Demonstrate the ability to calculate primary and secondary voltage and current based on turns ratios and conductor and overcurrent sizing, and how to determine the necessary kVA rating of the transformer. 4. Demonstrate how to feed, tap, and bond single and three-phase transformers for control and power distribution.	4	8	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
15	30	0