

SOUTHEAST COMMUNITY COLLEGE
CONSTRUCTION MANUFACTURING AND TECHNOLOGY DIVISION
Electrician Construction Program
Revision Date: August 23, 2021

I. CATALOG DESCRIPTION

Course Number: ELET1721
Course Title: Electrical Wiring Applications IV
Prerequisite(s): ELET1716 and ELET1718
Corequisite(s): ELET1717
Catalog Description: On the Job Training (OJT) to apply construction electrician principles covered in ELET1717.
Credit Hours: 1
Class Hours: 0
Lab Hours: 60
Total Contact Hours: 60

II. COURSE OBJECTIVES: *Course will:*

- A. Demonstrate the proper electrical material use.
- B. Demonstrate identification and proficient handling of tools.
- C. Examine how to use Ohm's Law, DC Theory, and Mathematics relevant to the work conducted.
- D. Illustrate industry work process applications, and safety standards needed for success in the electrical industry.
- E. Identify proper use of the appropriate articles of the 2020 National Electrical Code.
- F. Provide a foundation in the applications of conduit bending.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

- A. Student Learning Outcomes: *Student will be able to:*
 - 1. Install and maintain electrical wiring and devices with accuracy.
 - 2. Demonstrate an understanding of electronic component recognition, schematic drawing and reading.
 - 3. Identify electrical tools and equipment by name and proper use.
 - 4. Demonstrate safe use of electrical tools and equipment.
 - 5. Explain the meaning and relationship of electrical quantities such as voltage, current, resistance, conductance, and power using Ohm's Law.
 - 6. Develop the ability to measure electrical quantities with analog and digital multimeters.
 - 7. Develop critical thinking skills related to DC circuits.
 - 8. Construct, test, and troubleshoot DC circuits with learned problem-solving techniques.
 - 9. Relate operations of the basic DC circuit components to application in electronic circuits.
 - 10. Utilize applicable portions of the 2020 National Electrical Code when installing and maintaining electrical wiring and devices.
 - 11. Demonstrate level commensurate skill in bending conduit.
 - 12. Apply necessary conduit use; choose conduit size, measure, cut, bend and install appropriately.
- B. General Education Learning Outcomes (GELOs)
 - 1. GELO #5: Analytical, Quantitative, and Scientific Reasoning

Outcome 3: Effectively develop strategies, algorithms, or experiments (or performing experiments) to better describe the systems or to solve the problems.

IV. COURSE CONTENT/ OJT HOURS BY WORK PROCESS

- A. Project layout and planning.
- B. Underground installations.
- C. Raceway system installation.
- D. Install services.
- E. Floor duct installation.
- F. Motor control center installation.
- G. Installing, splicing and terminating wires and cables.
- H. Cable tray installation.
- I. Lighting system installation.
- J. Testing and troubleshooting feeders, motors and branch circuits.
- K. Fire alarm installation.
- L. Motor installation.
- M. Control system installation
- N. Installing & programming PLCs
- O. Installing instrumentation & process control systems.
- P. Security system installation.
- Q. Installing sound & communication systems.
- R. Installing & terminating transformers.
- S. Installing fiber-optic cable.
- T. Welding & brazing.
- U. Troubleshooting electrical systems.
- V. Material handling & prefabrication.

V. INSTRUCTIONAL MATERIALS

- A. Required Text(s): *IBEW Apprentice Guide*
- B. Other Resources: Instructor handouts, National Electric Code and References available at the Lincoln Electrical Joint Apprenticeship and Training Committee Training Center.

VI. METHODS OF PRESENTATION/INSTRUCTION

- A. Methods of presentation typically include a combination of the following:
 - 1. Cooperative/apprenticeship work experience.

VII. METHODS OF EVALUATION

- A. Methods of evaluation typically include a combination of the following:
 - 1. Demonstrated competencies are evaluated by a licensed electrician.

VIII. SPECIFIC COURSE REQUIREMENTS

- A. A grade of "C" or better is required for this course in order to progress into the next.