SOUTHEAST COMMUNITY COLLEGE
CONSTRUCTION MANUFACTURING AND TECHNOLOGY DIVISION
Electrician Construction Program
Revision Date: August 26, 2019
Syllabus Statements

I. CATALOG DESCRIPTION

Course Number:	ELET1736
Course Title:	TeleComm, Power Qual., UPS and EVITP
Prerequisite(s):	ELET1731 & ELET1733
Corequisite(s):	ELET1738
Catalog Description:	Structured Cabling systems are discussed in detail and certification testing is completed. The concepts of Uninterruptible Power Supply (UPS) systems & Fuel Cells, their components and applications. The fundamentals of Power Quality and its effects on an electrical system are covered in detail. Electric Vehicle Infrastructure Training Program (EVITP) is covered and a certification exam is given. The theory of Torque and the real world electrical torque applications is covered.
Credit Hours:	4
Class Hours:	45
Lab Hours:	45
Total Contact Hours:	90

II. COURSE OBJECTIVES: *Course will:*

A. Continue to build upon what was learned in course ELET1731 as well as introduce new concepts and work processes.
B. Demonstrate the basics of structured cabling, the types of cables used and the certification process.
C. Identify UPS and Fuel Cell systems and how they are configured.
D. Examine power quality, its effects on an electrical system and how to mitigate those effects.
E. Prepare the student for the Electric Vehicle Infrastructure Training Program certification exam.
F. Prepare the student on the theory of torque and its real world electrical applications.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES;

A. Student Learning Outcomes: *Student will be able to:*
1. Discuss the components of a structured cabling system.
2. Demonstrate how to terminate components of a structured cabling system with 100% accuracy.
3. Demonstrate how to do a certification test on a structured cabling system with 100% accuracy.
4. Explain the concepts and components of an uninterruptible power supply.
5. Outline the basics of a fuel cell system, its applications and installation of the system.
6. Recognize the theory of Power Quality and why it is so important.
7. Demonstrate how to identify a power quality issue using a test meter with 100% accuracy.
8. Demonstrate how to analyze and organize power quality testing data with 100% accuracy.
9. Describe the history and future of electric vehicles.

10. Demonstrate how to do residential and commercial load calculations as they pertain to a site survey of an electric vehicle supply equipment (EVSE) installation with 100% accuracy.
11. Discuss the commissioning and troubleshooting techniques used with a EVSE install.
12. Explain the theory of torque and how it pertains to electrical installations.
13. Demonstrate how to properly use tools that measure the amount of torque applied to an electrical termination with 100% accuracy.

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. CONTENT/TOPICAL OUTLINE

A. SECTION 1

1. The need for structured cabling systems.
2. Introduction to TIA/EIA standards and codes.
3. Structured cabling systems overview.
4. Safety codes.
5. Cabling systems of performance.
6. Unshielded twisted pair cables.
7. Unshielded twisted pair connected hardware.
8. Telecommunications pathways and spaces.
9. Telecommunications cabling and administration.
10. Telecommunications grounding and bonding.
11. Configuring structured cabling systems.
12. Structures cabling systems application.
13. Residential telecommunications cabling.
14. Certifying the UTP cabling system.

B. SECTION 2

1. Information technology sites and critical loads.
2. UPS- Uninterruptible power supplies.
3. Infrastructure components.
4. Critical UPS system design configurations.
5. UPS installation.
6. Critical systems services.
7. Fuel cell basics and applications.
8. Fuel cell installation.

C. SECTION 3

1. Why care about power quality?
2. The basics of power quality.
3. Safety.
4. Using the right tool.
5. Monitor setup.
6. Data collection and analysis.
7. Practical examples.
8. “Rules of Thumb”
9. Mitigation equipment.

D. SECTION 4

1. Electric vehicles.
2. Electric vehicles supply equipment (EVSE).
3. NEC chapters 1-4 and Article 625.

4. Advanced load calculations.
5. Site assessment.
6. EVSE commissioning.
7. EVSE troubleshooting.

E. SECTION 5
1. The National Electrical Benefit Fund (NEBF).
2. After Apprenticeship.
3. Soon to be a Journey-level worker.
4. Your national program.
5. Keys to success-motivation and leadership.
6. The National Labor Relations Board (NLRB)
7. The economics of unemployment.
8. The realities of construction.

F. SECTION 6
1. Torque theory.
2. Threaded fasteners basics.
3. Introduction to torque applications.
4. Torque products.
5. Real world electrical torque applications.

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. Lecture
2. Discussions
3. Demonstration

VII. METHODS OF EVALUATION

A. Methods of evaluation typically include a combination of the following:
1. Quizzes
2. Tests and exams

VIII. SPECIFIC COURSE REQUIREMENTS

A. The students will maintain an average of 75% (C) or more on the quizzes, tests and exams or the IBEW will drop them from the program.