Electrical Technology Program

Organization	**Washburn Institute of Technology**
Program Number	**46.0302**
Instructional Level	**Certificate**
Instructional Area	**Electrical Technology**

Target Population

Secondary and post-secondary.

Description

This program prepares individuals to apply technical knowledge and skills for employment in electrical construction and maintenance. Instructional areas include safety, electrical theory, blueprint reading, wiring, electrical construction, residential and commercial electricity, and National Electrical Code.

Entry Requirements

WorkKeys Entrance Assessment	Applied Math	Level 6.
WorkKeys Entrance Assessment	Reading for Information	Level 5.

Assessment Plan

Assessment is an integral part of the educational process at Washburn Tech and accurate feedback is an important tool in continuously improving the institution's technical programs. Students can expect to participate in assessment activities prior to entry into programs, within specific courses and following program completion for specific fields of study.

Student Learning Outcomes

A. Communicate effectively.
B. Integrate technology.
C. Learn effectively - use academics effectively.
D. Demonstrate cooperative/teamwork skills.
E. Apply safety.
F. Think critically and creatively.
G. Demonstrate responsible work ethics.

Program Outcomes

1. Perform calculations involving basic math, measurements and signed numbers.
2. Follow established safety procedures and guidelines.
3. Use basic hand tools, meters and measuring devices.
4. Navigate and interpret the National Electrical Code.
5. Apply National Electrical Code information to various building components and circuits.
6. Construct alternating current and direct current circuits.
7. Interpret blueprints, schematics, diagrams, and construction drawings.
8. Apply electrical theory when working with basic wiring circuits and use Ohm's law to calculate various loads.
9. Interpret types of loads, services, transformers, and other components of commercial buildings.
10. Troubleshoot common residential and commercial electrical components and circuits.
11. Perform sizing, installation and maintenance of residential electrical systems.
12. Perform sizing installation and maintenance of commercial electrical systems.
13. Perform installation and maintenance of motors and generators.
14. Perform installation and maintenance of transformers.

Course #	Course Title	Credit Hours	Required
CHC105	Introductory Craft Skills	3	Yes
IND109	OSHA-30 Hour Construction Ind Cert	2	Yes
ELE125	AC/DC Circuits I	4	Yes
ELE120	National Electrical Code I	4	Yes
ELE132	Print Reading	2	Yes
ELE135	Commercial Wiring, I	4	Yes
ELE140	Residential Wiring, I	4	Yes
ELE142	National Electrical Code II	4	Yes
ELE137	International Residential Code	3	Yes

Program Course Descriptions

CHC105 Introductory Craft Skills (3 credits)

This Introduction to Craft Skills is a required course for all students entering a construction program. The intent if this course is to introduce the students to the construction trades. It is very important for every student to learn the proper way to conduct themselves while in the shop or on the job site. This course will cover shop and job site safety, tool safety, personal protective devices, protective railings, proper storage and handling of construction materials, and construction drawings. This course will follow the NCCER modules for: Basic Safety, Introduction to Construction Math, Introduction to Hand Tools, Introduction to Power Tools, Introduction to Prints, Basic Rigging, Basic Communication Skills, and Basic Employability Skills.

IND109 OSHA-30 Construction Certificate (3 credits)

This course provides an overview of the Occupational Safety and Health Administration Construction Training Topics. This course is intended to provide entry level construction workers a broad awareness on recognizing and preventing hazards on a construction site. This course will also address real world challenges that electrical workers face on a daily bases. It will introduce avoiding oversights that could result in shock and arc flash accidents. The material presented will emphasize the rules specified by the National Fire Protection Association (NFPA) using NFPA 70E standards. After taking this course, students will be able to take the arc flash certification test.

ELE120 National Electrical Code I – (4 credits)

This is an introductory course on the use and interpretation of the current National Electrical Code. The student will develop a working knowledge of the code which will permit them to apply it to everyday applications. The course will include the requirements for electrical installation, wiring design and protection, methods and materials used, equipment for general use, special occupancies equipment, and condition.

LE120 National Electrical Code I – (4 credits)

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ELE125 AC/DC Circuits I (4 credits)

This course introduces students to the basic of alternating current and direct current circuits. The student will perform calculations using Ohm's law and the study the construction, operation and purpose of resistors, potentiometer, switches, fuses, relay capacitors, inductors, batteries, alternators, transformers, and series-parallel resonant circuits. Students will build basic AC and DC circuits using multi meter and oscilloscope.

ELE132 Print Reading (2 credits)

Print Reading introduces the student to the fundamentals of interpreting construction drawings. Students will learn to interpret plan views, elevation views, sections, details, schedules, specifications, symbols and abbreviations found on most residential, commercial, and industrial construction drawings.

ELE135 Commercial Wiring I (4 credits)

In Commercial Wiring I, the student will study the theory, practice, and National Electrical Code requirements for commercial wiring. The course consists of definitions, formulas, wiring methods, overcurrent protection, calculation and sample examinations. Wiring projects are also assigned to put the theories learned in the classroom into practice.

ELE137 International Residential Code (3 credits)

This course is a continuation of the National Electrical Code I course on the use and interpretations of the current national electric code (NEC Chapters 5-9).

ELE142 National Electrical Code II (4 credits)

This course is an introduction to residential wiring methods that includes practical application and hands on experience in implementing code requirements. The student will gain the necessary skills to wire a residence to meet the minimum requirements as set forth in the current National Electrical Code for residential occupancies.

ADA Notification Statement and Disability Services:

The Testing/ADA Coordinator office is responsible for assisting in arranging accommodations and for identifying resources at Washburn Tech for persons with disabilities. Qualified students with disabilities MUST register and provide documentation with the office to be eligible for services. New requests for accommodations should be submitted two months or more prior to the date services should begin by contacting the Testing/ADA Coordinator's office as soon as a need may arise. Depending on the accommodation request, four to eight weeks lead time may be needed for timely and effective provision of services. Testing/ADA Coordinator coordinates and assists in arranging services it deems appropriate for eligible students on a case-by-case basis.
If you are a student with a disability that may substantially limit your ability to participate in this class and believe you will need accommodations, it is your responsibility to contact:

Testing/ADA Coordinator Phone: 785-670-3365
E-Mail: gloria.christian@washburn.edu

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