UTAH SYSTEM OF HIGHER EDUCATION

Utah System of Higher Education
Electrical Apprenticeship
FY2027 / 24 Credits (720 Clock-Hours)

Foundational Courses

TEEL 1110 Electrician Apprentice 1A — 3 Credits / 90 Clock-Hours

The Electrician Apprentice 1A course establishes a solid foundation in electrical fundamentals and the study of basic electrical theory. This course addresses math applications as they relate to the electrical field. In this course, students will use the National Electrical Code (NEC) to apply code requirements to electrical systems. Students will learn and practice in the basics of conduit bending. Students will be introduced to electrical and jobsite hazards and workplace safety.

Objectives:
- Demonstrate a proficiency in general math skills with an emphasis on how they relate to the electrical field.
- Identify electrical and jobsite hazards.
- Explain workplace safety.
- Apply mathematical principles to conduit bending.
- Demonstrate a practical application of conduit bending.
- Explain the fundamentals of electrical theory.
- Explain the fundamentals of electrical circuitry.
- Demonstrate the application of the National Electrical Code (NEC) Articles 090-240.
- Demonstrate how to navigate the National Electrical Code (NEC) Articles 090-240.

TEEL 1120 Electrician Apprentice 1B — 3 Credits / 90 Clock-Hours

The Electrician Apprentice 1B course continues the study of electrical theory and its application within the electrical field. In this course, students will learn how devices and electrical systems work. Students will also explore lock out tag out, learn what makes a qualified person, and become more familiar with the National Electrical Code (NEC).

Objectives:
- Apply the fundamentals of electrical theory.
- Apply the fundamentals of electrical circuitry.
- Explain the definition of a qualified person.
- Explain responsibilities and risks of qualified persons.
- Demonstrate principles and procedures of lock out tag out.
- Demonstrate the application of the National Electrical Code (NEC) Articles 300-450.
- Demonstrate how to navigate the National Electrical Code (NEC) Articles 300-450.

TEEL 1210 Electrician Apprentice 2A — 3 Credits / 90 Clock-Hours

The Electrician Apprentice 2A course discusses single-phase and three-phase alternating current (AC) power systems, inductance, capacitance, reactance, power factor, and power correction. In this course, students will begin a more comprehensive analysis of National Electrical Code (NEC) requirements and calculations. They will explore the NEC requirements for wiring methods and installations of electrical systems as well as electrical safety in the use of energized equipment.

Objectives:
- Show proficiency in calculating properties of an AC circuit.
- Demonstrate proper use of hand tools and electrical equipment in practice live applications.
- Demonstrate proficiency in applying and calculating the sizing of Branch circuits, feeders, services, and load calculations.

TEEL 1220 Electrician Apprentice 2B **3 Credits / 90 Clock-Hours**

The Electrician Apprentice 2B course continues the comprehensive analysis of the National Electrical Code (NEC). In this course, students will evaluate the functions, uses, and calculations for direct current (DC) and alternating current (AC) motors, transformers, and other equipment. They will be instructed in electrical safety regarding Personal Protective Equipment (PPE) clothing requirements.

Objectives:
- Identify the types and voltages of transformers.
- Calculate values related to transformers.
- Apply the NEC with emphasis in codes regarding motors, transformers, and other electrical equipment.
- Identify types, categories, and ratings of PPE clothing.
- Show applications of types, categories, ratings of Personal Protective Equipment (PPE).

TEEL 1310 Electrician Apprentice 3A **3 Credits / 90 Clock-Hours**

The Electrician Apprentice 3A course discusses the roles of bonding and grounding in electrical systems per National Electrical Code (NEC) requirements. In this course, students will be shown the different parts, functions, and calculations for grounding and bonding. Students will explore the rules that apply to different electrical related boundaries set up by the National Fire Protection Agency (NFPA).

Objectives:
- Describe the NEC requirements regarding grounding and bonding.
- Calculate sizes of grounding and bonding conductors.
- Explain the various conductors and properties of grounding and bonding contained in an electrical system.
- Explain NFPA rules to limit approach, restricted approach, and arc flash boundaries.

TEEL 1320 Electrician Apprentice 3B **3 Credits / 90 Clock-Hours**

The Electrician Apprentice 3B course explores basic and complex electrical motor control systems and their respective fundamental concepts, diagrams, and applications. Students will examine the wiring and protecting of motors and motor circuits per National Electrical Code (NEC) requirements.

Objectives:
- Identify electrical symbols and diagrams pertaining to motors and motor control circuits.
- Demonstrate how to wire a control circuit based on a diagram.
- Identify various control devices.
- Explain application of various control devices.
- Apply proper safety protocols around motor controls.

TEEL 1410 Electrician Apprentice 4A **3 Credits / 90 Clock-Hours**

The Electrician Apprentice 4A course explores the basic skills necessary for becoming crew leader and managing electrical hazards. In this course, students will be instructed in special occupancies, special equipment, special conditions and communication systems and their respective National Electrical Code (NEC) requirements.

Objectives:
• Demonstrate the application of the National Electrical Code (NEC) Chapters 5-8.
• Demonstrate how to navigate the National Electrical Code (NEC) Chapters 5-8.
• Explain the costs related to safety.
• Perform a hazard / risk assessment.
• Explain Utah licensing requirements and rules.

TEEL 1420 Electrician Apprentice 4B **3 Credits / 90 Clock-Hours**

The Electrician Apprentice 4B course, students will review all concepts from the previous years of electrical apprenticeship education. This course prepares individuals for the Utah State Journeyman qualifying examinations. Upon completion, students will demonstrate journeyman-level understanding of the electrical field as a whole.

Objectives:
• Apply knowledge of National Electrical Code (NEC) to pass a comprehensive review.
• Apply knowledge of electrical theory to pass a comprehensive review.
• Apply knowledge of safety to pass a comprehensive review.