



Tooele Technical College

88 S Tooele Blvd, Tooele, UT 84074

435-248-1800

Certificate Syllabus		Electrician Apprentice
Certificate of Skill Competence (Catalog Year: 2020)		
Tooele Tech Core (648 hours required)		Hours
<i>Electrician Apprentice (648 hours required)</i>		<i>Hours</i>
<i>Introduction to Electrical 1A (ELTT1903)</i>		81.00
<i>Orientation and Basic Principles (1)</i>		4.00
<i>Tools, Fasteners, and Knots (2)</i>		4.00
<i>Introduction to Safety, Navigating the NEC and EWR Plans (3)</i>		4.00
<i>Introduction to Electric Charges and Basic Math (4)</i>		4.00
<i>Applied Math, Circuit Theory, Plans & Specs (5)</i>		4.00
<i>Applied Math, Ohms Law, Electrical Symbols, Boxes and Box Fill (6)</i>		4.00
<i>Conduit Bending (7)</i>		4.00
<i>Dwelling Circuit Requirements, Outlet Locations, and General Lighting Load (8)</i>		4.00
<i>Conductor Types, Ampacity, Overcurrent Protection, Type NM cables, and Common Voltage Systems (9)</i>		4.00
<i>Voltage Drop, Cable, Conduit, and Tubing (10)</i>		4.00
<i>Mid-term Review and Exam (11)</i>		4.00
<i>Conductor Terminology, Switches, and Receptacles (12)</i>		4.00
<i>GFCI, AFCI, and Special Purpose Receptacles (13)</i>		4.00
<i>Luminaires (Light Fixtures) (14)</i>		4.00
<i>Box Fill, Introduction to Series Circuits (Front Bedroom) (15)</i>		4.00
<i>Box Sizing and Series Circuits (Master Bedroom) (16)</i>		4.00
<i>Lighting and Small Appliance Branch Circuits (17)</i>		4.00
<i>First Semester Review (18)</i>		4.00
<i>Final Exam (19)</i>		4.00
<i>Competency Exam (20)</i>		5.00
<i>Introduction to Residential Wiring 1B (ELTT1904)</i>		81.00
<i>Track Lighting, Dimmers and Introduction to Parallel Circuits (1)</i>		4.00
<i>Laundry and Bathroom Receptacles and Parallel Circuits (2)</i>		4.00
<i>Garage and Garage Door Circuits, Underground Installations and Parallel Circuit Calculations (3)</i>		4.00
<i>Appliance and Special Purpose Outlets (4)</i>		4.00
<i>Ranges, Ovens, Counter-Mounting Cooking Units and Other Kitchen Appliances (5)</i>		4.00
<i>Bathrooms, Exhaust Fans and Hydromassage Tubs (6)</i>		4.00
<i>Heating and Air Conditioning (7)</i>		4.00
<i>Residential Limited Energy Systems (8)</i>		4.00
<i>Mid-term Review and Exam (9)</i>		4.00
<i>Multiwire Branch Circuits and Introduction to Combination Circuits (10)</i>		4.00

<i>Combination Circuits, Conductor Ampacity correction and Conduit Fill (11)</i>	4.00
<i>Services and Service Equipment and Cost of Electrical Power (12)</i>	4.00
<i>Grounding and Bonding, Specialty Tools (13)</i>	4.00
<i>Overcurrent Protection and Circuit Conditions (14)</i>	4.00
<i>Service Entrance Calculations (15)</i>	4.00
<i>Swimming Pools, Spas and Hot Tubs (16)</i>	4.00
<i>Home Automation, Standby Power and Photovoltaic Systems (17)</i>	4.00
<i>Second Semester Review (18)</i>	4.00
<i>Final Exam (19)</i>	4.00
<i>Competency Exam (20)</i>	5.00
AC Electrical Systems (Motors) 2A (ELTT1905)	81.00
<i>NEC Scope, Definitions, Working Spaces, and Branch Circuits (1)</i>	4.00
<i>Service Calculations and Class 1 Installations (2)</i>	4.00
<i>Services and Class 2 Installations (3)</i>	4.00
<i>Conductor and Overcurrent Protection: Class 3 Installations (4)</i>	4.00
<i>Grounding Terminology, Equipment Grounding Conductors and Commercial Garage Installations (5)</i>	4.00
<i>Grounding Electrode System, Main Bonding Jumper and Motor fuel Dispensing Facilities (6)</i>	4.00
<i>Ohm's Law Review, Article 300, Aircraft Hangar, and Bulk Storage Facilities (7)</i>	4.00
<i>Conduit Fill, Box Fill, Pull Box Sizing, Raceway and Cable Support; Spray Applications (8)</i>	4.00
<i>First Semester Mid-Term Review and Exam (9)</i>	8.00
<i>Switches, Switchboards and Panelboards and Health Care Facilities (10)</i>	4.00
<i>Flexible Cords, Luminaires, Appliances and Health Care Facilities (11)</i>	4.00
<i>Introduction to AC Theory and Places of Assembly (12)</i>	4.00
<i>AC Theory - Inductive and Capacitive Reactance: Miscellaneous Buildings (13)</i>	4.00
<i>AC Theory - Impedance and Power Factor: Temporary Installation (14)</i>	4.00
<i>Single-Phase Transformers: Introductions, Types and Applications, Single-Voltage Calculations and Connections (15)</i>	4.00
<i>Single-Phase Transformers: Dual-Voltage, Fault-current, Code Calculations (16)</i>	4.00
<i>First Semester Exam Review (17)</i>	8.00
<i>First Semester Exam (18)</i>	5.00
Electrical Conductors/Raceways 2B (ELTT1906)	81.00
<i>Three-Phase Power Generation, Transmission and Distribution; Intro to Three-Phase Ohm's Law (1)</i>	4.00
<i>3 Phase Transformer: Delta-Delta (2)</i>	4.00
<i>3 Phase Transformers: Delta-Wye (3)</i>	4.00
<i>Non-Linear Loads: 3 Phase Fault Currents and Voltage Drop (4)</i>	4.00
<i>Transformers: NEC Requirements (5)</i>	4.00
<i>Buck-Boost Transformers: Single and Three Phase Connections and Applications (6)</i>	4.00
<i>Buck-Boost Transformers: Calculations and Selection (7)</i>	4.00
<i>Generators, Transfer Switches and Emergency Systems (8)</i>	4.00
<i>Second Semester Mid-Term and Review (9)</i>	4.00
<i>Electric Motors: DC and AC Single-Phase (10)</i>	4.00
<i>Electric Motors: Polyphase (11)</i>	4.00
<i>Motors: General Knowledge and Sizing Branch Circuit Conductors (12)</i>	4.00
<i>Motor Branch Circuit Overcurrent Protective Devices: Short Circuit and Grounding Fault Protection (13)</i>	4.00
<i>Motor: Overload Protection, Disconnects ,Starters and EGC (14)</i>	4.00

<i>Locked Rotor Current and Phase Loss for Motors; A/C and Refrigeration Equipment and Fire Pumps (15)</i>	4.00
<i>Motor Feeder Conductors, OCPDs and Tap Conductors (16)</i>	4.00
<i>Second Semester Final Exam Review (17)</i>	4.00
<i>Final Exam (18)</i>	4.00
<i>Lab - Transformers and Motors (19)</i>	4.00
<i>Lab - Transformers and Motors (20)</i>	5.00
Blueprints and Grounding 3A (ELTT1907)	81.00
<i>Practical Guide to OSHA and NFPA 70E (1)</i>	4.00
<i>Introduction to Grounding and Bonding (2)</i>	4.00
<i>General Requirements for Grounding and Bonding (3)</i>	4.00
<i>System Grounding: Grounded Conductors, Systems Required to be Grounded, and Systems Not Permitted to be Grounded (4)</i>	4.00
<i>System Grounding: Separately Derived Systems, main Bonding Jumpers and System Bonding Jumpers (5)</i>	4.00
<i>Grounding Electrode System and Grounding Electrode Conductors (6)</i>	4.00
<i>Line-Side and Load-Side Bonding (7)</i>	4.00
<i>Equipment Grounding and Equipment Grounding Conductors (8)</i>	4.00
<i>Grounding and Specific Equipment and Conditions (9)</i>	4.00
<i>First Semester Mid-Term Review and Exam (10)</i>	4.00
<i>Printreading: Project Design, Development and Specifications (11)</i>	4.00
<i>Printreading: Site, Civil, Survey and Structural Drawings (12)</i>	4.00
<i>Printreading: Architectural Drawings - Line, Dimensions and Wall Types (13)</i>	4.00
<i>Printreading: Architectural Drawings - Schedules, Details and Coordination (14)</i>	4.00
<i>Printreading: "MEP", "M", "E" and "P" Drawings (15)</i>	4.00
<i>Leadership: Foreman Training (16)</i>	4.00
<i>First Semester Exam Review (17)</i>	4.00
<i>First Semester Exam (18)</i>	4.00
<i>Hands-on Lab (19)</i>	4.00
<i>Hands-on Lab (20)</i>	5.00
Motor Controls 3B (ELTT1908)	81.00
<i>Test Instruments and Test Instrument Safety (1)</i>	4.00
<i>Toggle Switch, Push Button and Basic Load Symbols - Introduction to Ladder Designs (2)</i>	4.00
<i>Introduction to Contactors and Relays (3)</i>	4.00
<i>Applications Using Contactors and Relays (4)</i>	4.00
<i>Manual and Automatic Control Devices (5)</i>	4.00
<i>Ladder Diagram Applications (6)</i>	4.00
<i>Automatic-Control Practical Applications (7)</i>	4.00
<i>Magnetic Motor Starters (8)</i>	4.00
<i>Magnetic Motor Starters and Pilot Devices: Practical-Application Emphasis on Holding Contacts (9)</i>	4.00
<i>Mid-term Review and Exam (10)</i>	4.00
<i>Motor Overload Protection, Motor Power Connections and Practical Scenarios (11)</i>	4.00
<i>Magnetic Motor Starters: Practical-Application Emphasis on overload Protection (12)</i>	4.00
<i>Motor Reversing: Controllers and Connections (13)</i>	4.00
<i>Magnetic Motor Starters: Practical-Application Emphasis on Reversing Motors (14)</i>	4.00
<i>Latching Relays, Alternating Relays and Jogging Circuits (15)</i>	4.00
<i>Magnetic Motor Starters: Practical-Application Emphasis on Multimotor Equipment (16)</i>	4.00

<i>Final Exam Review (17)</i>	4.00
<i>Final Exam (18)</i>	4.00
<i>Lab (19)</i>	4.00
<i>Lab (20)</i>	5.00
Advanced Controls 4A (ELTT1909)	81.00
<i>Energized Electrical Work Relative to NFPA 70E (1)</i>	4.00
<i>Power Distribution Systems and Phase-Loss Monitors (2)</i>	4.00
<i>Solid-State Relays and Phase-Loss Lab (3)</i>	4.00
<i>Timing Relays: On-Delay, Interval and Recycle (4)</i>	4.00
<i>Timing Relays: Practical Application of On-Delay, Recycle and Interval Timers (5)</i>	4.00
<i>Timing Relays: Off-Delay, One-Shot and Multifunction (6)</i>	4.00
<i>Timing Relays: Practical Application of Off-Delay, One-Shot and Multifunction Timers (7)</i>	4.00
<i>Counters and Sensors (8)</i>	4.00
<i>Mid-term Review and Exam (9)</i>	4.00
<i>Motor Starting Methods (10)</i>	4.00
<i>Motor Drives - Accelerating and Decelerating Methods (11)</i>	4.00
<i>Introduction to Programmable Controllers (12)</i>	4.00
<i>Advanced Lab - Automatic Car Wash (13)</i>	4.00
<i>Energy Management and Building Automation Including Latching Relays (14)</i>	4.00
<i>Fire Suppression Systems and Advanced Lab (15)</i>	4.00
<i>Preventive Maintenance and Troubleshooting (16)</i>	4.00
<i>First Semester Exam Review (17)</i>	4.00
<i>First Semester Final Exam (18)</i>	4.00
<i>Lab (19)</i>	4.00
<i>Lab (20)</i>	5.00
Journeyman Preparation 4B (ELTT1910)	81.00
<i>Introduction, Definitions and Boxes (1)</i>	4.00
<i>Cables and Underground Installations (2)</i>	4.00
<i>Raceways and Conductors (3)</i>	4.00
<i>Dwelling Units: General Provisions (4)</i>	4.00
<i>Dwelling Units: Specific Provisions (5)</i>	4.00
<i>Services: Equipment, Working Space, Grounding and Bonding (6)</i>	4.00
<i>Commercial Installations (7)</i>	4.00
<i>Hazardous Locations and Health Care Facilities (8)</i>	4.00
<i>Mid-term Review and Exam (9)</i>	4.00
<i>Miscellaneous Occupancies and Special Equipment (10)</i>	4.00
<i>Industrial Services, Transformers and Feeder Taps (11)</i>	4.00
<i>Motors and Power Quality (12)</i>	4.00
<i>Service and Load Calculations (13)</i>	4.00
<i>BCES Application (14)</i>	4.00
<i>Fire Alarm Systems - Introduction and Overview (15)</i>	4.00
<i>Voice/Data/Video - Introduction and Overview (16)</i>	4.00
<i>Final Exam Review (17)</i>	4.00
<i>Second Semester Final Exam (18)</i>	4.00

<i>Lab (19)</i>	4.00
<i>Lab (20)</i>	5.00