



NEVADA LABOR COMMISSIONER  
NEVADA STATE APPRENTICESHIP COUNCIL  
2023 Non-Joint Standards of Apprenticeship

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## Appendix A

### WORK PROCESS SCHEDULES AND RELATED INSTRUCTION OUTLINE

*Northern Nevada IEC*

**Electrician**

O\*NET-SOC CODE: \_\_\_ RAPIDS CODE: 47.2111.00

APPROVED BY  
THE NEVADA LABOR COMMISSIONER AND THE NEVADA STATE APPRENTICESHIP COUNCIL

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Toni Giddens, Nevada State Apprenticeship Director

REGISTRATION DATE: \_\_\_\_\_

RAPIDS PROGRAM ID NUMBER: \_\_\_\_\_

DEVELOPED IN COOPERATION WITH THE  
THE NEVADA LABOR COMMISSIONER, THE NEVADA STATE APPRENTICESHIP COUNCIL AND  
THE U.S. DEPARTMENT OF LABOR

Appendix A

**WORK PROCESS SCHEDULE**

This schedule is attached to and a part of these Standards for the above identified occupation.

- 1. TYPE OF OCCUPATION**  Time-based  Competency-based  Hybrid

**2. TERM OF APPRENTICESHIP**

The term of the occupation shall be defined by the attainment of all competencies of the position. 1) If the program uses a time-based approach, requires the completion of not less than 2,000 hours of [work experience,] on-the-job learning, consistent with training requirements as established by practice in the trade; (2) If the program uses a competency-based approach, specifies the skills that must be demonstrated by an apprentice and addresses how on-the-job learning will be integrated into the program; or (3) If the program uses a hybrid approach, specifies the skills that must be acquired and the minimum number of hours of on-the-job learning that must be completed by an apprentice.

This would be expected to occur within approximately 8,000 hours (must be at least 2,000 hours) of OJL, supplemented by the minimum of 144 hours of related instruction per year of the apprenticeship.

**3. RATIO OF APPRENTICES TO JOURNEYWORKERS**

The apprentice to journey worker/fully trained worker ratio is: 1:2 apprentice(s) to journey worker/fully trained worker(s).

**4. APPRENTICE WAGE SCHEDULE**

An apprentice minimum starting wage will be at least \$ 17.00 per hour. Apprentices shall be paid a progressively increasing schedule of wages based on either a percentage or a dollar amount of the current hourly journey worker/fully trained worker wage. A journey worker/fully trained worker minimum wage will be at least \$ 28.00.

Periodic review and evaluation of the apprentice's on-the-job learning and related technical instruction will be conducted in alignment with the wage schedule established.

**5. WORK PROCESS SCHEDULE (See attached Work Process Schedule)**

The sponsor may modify the work processes to meet local needs prior to submitting these Standards to the appropriate Registration Agency for approval.

**6. RELATED INSTRUCTION OUTLINE** (See attached Related Instruction Outline)

The sponsor may modify the related instruction to meet local needs prior to submitting these Standards to the appropriate Registration Agency for approval.

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Appendix A

**WORK PROCESS SCHEDULE**

The term of the occupation shall be defined by the attainment of all competencies, both technical and behavioral, of the position, which would be expected and approximated to occur within 8,000 hours of OJL, supplemented by a minimum of 144 hours of related instruction per year of apprenticeship.

Apprenticeship Competencies – Technical

**PRELIMINARY WORK .....Approximately 600 hours**

Learning the names and uses of the equipment used in the trade: kind, size, and use of cable, wire, boxes, conduits, and fittings, switches, receptacles, service switches, cutouts, etc.

Learning the names and uses of the various tools used in assembling this material, care of these tools, and other instructions necessary to familiarize the apprentice with the material and tools of the trade.

**ROUGH-IN WIRING.....Approximately 4,000 hours**

Assisting in getting material from stock room. Loading truck and equipment on-the-job.

Laying out the various outlets, switches, receptacles, and other details of the job, from blueprints or by direction of the superintendent of construction.

Cutting wire, cable, conduit, and raceway: threading and reaming conduit, boring and cutting chases under the direction of an electrician.

Installing various kinds of wires, cables, and conduits in accordance with Requirements.

Assisting electricians in pulling wires, attaching wires to fish tape and keeping wires from kinks and abrasions.

Connecting conductors to switches, receptacles, or appliances with proper methods of splicing, soldering, and taping.

Installing service switches or load center and sub-feeders and fastening up these parts, running raceways, and pulling conductors under the direction of an electrician.

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Assisting in preparing lists of materials used, including names, number of pieces, or number of feet, etc., for office records.

Loading unused material and cleaning up job area.

**FINISH WORK** .....Approximately 2,000 hours

Connecting and setting switches, receptacles, plates, etc.

Installing proper size and types of fuses for each circuit.

Installing and connecting various kinds of electrical utilization equipment.

Assisting electricians in installing and completing work in accordance with the rules and regulations of the National Fire Protection Association and special local regulations; proper sizes of wires, service, conduits, etc.

**TROUBLE SHOOTING AND SERVICE WORK** .....Approximately 1,000 hours

Repairing all kinds of electrical work.

Checking out trouble and making repairs under supervision of an electrician.

Tracing the polarity of conductors and devices.

Testing the circuit for grounds and shorts and locating and correcting job defects.

**MOTOR INSTALLATION AND CONTROL** .....Approximately 400 hours

Installing over-current devices.

Checking for proper installation and rotation.

Installing replacement motors.

Analyzing motor circuits and troubleshooting.

Installing pushbuttons, pilot lights, relays, timing devices, and interlocking controls.

Wiring all types (gas, oil, stoker, etc.) heating equipment.

Installing wiring and controls for air conditioning.

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**TOTAL HOURS ON-THE-JOB LEARNING**

**8,000 hours**

The above on-the-job-learning (OJL) work process competencies are intended as a guide. It need not be followed in any sequence, and it is understood that some adjustments may be necessary in the hours allotted for different work experience. In all cases, the apprentice is to receive sufficient experience to make them fully competent and use good workmanship in all work processes, which are a part of the industry. In addition, the apprentice shall be fully instructed in safety and OSHA requirements.

**Apprenticeship Competencies - Behavioral**

In addition to mastering all the essential technical competencies, an apprentice must consistently demonstrate at an acceptable level the following behavioral competencies, to complete the apprenticeship.

Item #	Behavioral Competencies
1.	Participation in team discussions/meetings
2.	Focus in team discussions/meetings
3.	Focus during independent work
4.	Openness to new ideas and change
5.	Ability to deal with ambiguity by exploring, asking questions, etc.
6.	Knows when to ask for help
7.	Able to demonstrate effective group presentation skills
8.	Able to demonstrate effective one-on-one communication skills
9.	Maintains an acceptable attendance record
10.	Reports to work on time
11.	Completes assigned tasks on time
12.	Uses appropriate language
13.	Demonstrates respect for patients, co-workers, and supervisors
14.	Demonstrates trust, honesty, and integrity
15.	Requests and performs work assignments without prompting
16.	Appropriately cares for personal dress, grooming and hygiene
17.	Maintains a positive attitude
18.	Cooperates with and assists co-workers
19.	Follows instructions/directions
20.	Able to work under supervision
21.	Able to accept constructive feedback and criticism
22.	Able to follow safety rules
23.	Able to take care of equipment and workplace
24.	Able to keep work area neat and clean
25.	Able to meet supervisor's work standards
26.	Able to not let personal life interfere with work
27.	Adheres to work policies/rules/regulations

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**RELATED INSTRUCTION OUTLINE**

The related instruction has been developed in cooperation with employer-partners as part of the apprenticeship. The following is a set of courses to be delivered by subject matter experts.

Related Technical Instruction (RTI) - This instruction shall include, but not be limited to, at least 144 hours per year for each year of the apprenticeship. The related theoretical education listed below is tightly integrated with real work product. The curriculum is defined as a variety of classes, around which the exams and projects are based. By defining the RTI this way, all competencies required of the students are met, through project work.

**COURSE  
TOPICS**

**HOURS**

IEC Apprentice Curriculum for providing related technical instruction includes recommendations for delivery to IEC Apprentices. These recommendations include items such as instructor requirements, grading policy, instructor interaction, labs, and testing requirements among others. Methods of instruction may include classroom, distance learning using electronic media, and hands on laboratory work. Students must successfully complete required assignments, quizzes, examinations, and fieldwork in order to advance to the next year of instruction in the apprenticeship program.

**First Year Electrical Apprenticeship Program**

Objective: To provide the student with instruction in practical aspects of electrical theory, introduction to National Electrical Code, basic wiring methods, elementary blueprint reading, instruction in use of tools, and conduit bending. Instruction will include consistent reminders of safe jobsite practices.

Major topics covered in the course are hand tools; safety and first aid; technical mathematics; basic electrical theory; National Electrical Code; blueprint reading; electrical wiring methods; branch and feeder circuits; lighting and receptacle outlets; basic concepts of circuit protection; basic concepts of lighting; and conduit bending, knots, and basic rigging. Curriculum specified equivalent of 144 hours.

**Second Year Electrical Apprenticeship Program**

Objective: To provide the student with fundamentals of AC circuit theory, AC/DC motors, generators, and alternators, industrial and commercial wiring, and continued jobsite safety practices.

Major topics covered in the course are electrical measuring instruments; AC electricity and circuits; series, parallel circuits, and three-phase circuits; resistive, inductive, capacitive series, and parallel circuits; transformers; generators; motors; alternators;

National Electrical Code; industrial and commercial wiring systems; service and feeder calculations; grounding, bonding, and over current protection; and hazardous locations. Curriculum specified equivalent of 144 hours.

**Third Year Electrical Apprenticeship Program**

Objective: To interpret blueprints and construction drawings and properly install electrical wiring for single phase and three phase motors and their controls as well as jobsite safety practices.

Major topics covered in the course are construction drawings, grounding of electrical equipment, motor controls, application and installation of motor control devices, logic and line diagrams, hazardous locations, signs and sign connections, and fiber optics. Curriculum specified equivalent of 144 hours.

**Fourth Year Electrical Apprenticeship Program**

Objective: To provide the student with trouble-shooting skills for solid state, photoelectric, electro-mechanical electronic control devices, lighting protection, grounding and design, load calculations, and leadership. Review and complete jobsite safety training.

Major topics covered in the course are electrical safety; solid state, photoelectric, electro-mechanical, proximity, and programmable electronic control devices; AC reduced voltage starters; preventative maintenance and troubleshooting; fire alarms systems and fire protection signaling systems; NEC and safety standards and regulations; services, switchboards, and panelboards; conductors and over current protection devices; lighting protection and grounding; designing and installing wiring systems; troubleshooting circuits, outlets, motors, motor compressors, and transformers; hazardous locations; load calculations; and leadership. Curriculum specified equivalent of 144 hours.

SECTION 27 - OFFICIAL ADOPTION OF APPRENTICESHIP STANDARDS

Northern Nevada IEC hereby adopts these standards of apprenticeship.

*Sponsor(s) designate the appropriate person(s) to sign the standards on their behalf.*



Signature of Sponsor (designee)

Date: 3/16/2023

JENNIFER ESTRADA DIRECTOR  
Type Name & Title



**STATE OF NEVADA**  
**Nevada State Apprenticeship Council**  
**5910 Form**

Program Name Northern Nevada IEC RAPIDS Program # \_\_\_\_\_  
 Address 3370 Executive Pointe Way, Ste 42 City Carson City State/Zip NV 89706 Telephone (775) 885-0333  
 Contact Person Jennifer Estrada Title Executive Director Email Address director@nnviec.org  
 Type of Program  Time-based  Competency-based  Hybrid EIN # \_\_\_\_\_ NAICS Code \_\_\_\_\_

Type of Action: (Check One) A. <input checked="" type="checkbox"/> Wage Increase B. <input type="checkbox"/> Revision of Standards C. <input type="checkbox"/> New Occupation D. <input type="checkbox"/> New Program	Type of Program: (Check One) A. <input type="checkbox"/> Individual Union B. <input type="checkbox"/> Individual Non-Union C. <input type="checkbox"/> Group Union D. <input checked="" type="checkbox"/> Group Non-Union	Journey Workers (JW) A. No. of Females _____ B. No. of Minorities _____ C. No. JW <u>15</u> D. No. of Employers <u>5</u>	Pay Period (Check One) <input type="checkbox"/> Weekly <input checked="" type="checkbox"/> Bi-Weekly <input type="checkbox"/> Semi Monthly Pay Increases (Months) 3 <input type="checkbox"/> 6 <input type="checkbox"/> 12 <input type="checkbox"/> Other <input type="checkbox"/>
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**TRADE INFORMATION**

Occupation Name and O*NET CODE (use separate form for each occupation)	Term (OJT hours)	RTI (Classroom hours)	# Of Journey workers	# Of Apprentices in Training	Journey worker Hourly Rate	Days per Week
<b>Electrician 47-2111.00</b>	<b>8000</b>	<b>576</b>		<b>15</b>		<b>5</b>

**HOURLY APPRENTICE WAGES BY PERIOD (Excluding Benefits) Top Line Dollar Amounts, Bottom Line Percentages**

Occupation Name and O*NET CODE	1 <sup>ST</sup>	2 <sup>ND</sup>	3 <sup>RD</sup>	4 <sup>TH</sup>	5 <sup>TH</sup>	6 <sup>TH</sup>	7 <sup>TH</sup>	8 <sup>TH</sup>	9 <sup>TH</sup>	10 <sup>TH</sup>
	\$ 17.00	\$ 24.00	\$ 24.80	\$ 25.60	\$ 26.40	\$ 27.20	\$ 28.00	\$ 28.80	\$	\$
	50 %	55 %	60 %	65 %	70 %	75 %	80 %	85 %	%	%
<b>Fringe Benefits (\$ or %)</b>										

The Sponsor / Program Coordinator certifies and assures that it will utilize qualified training personnel in the delivery of the related instruction, such as subject matter experts (e.g., journeyworkers) who are recognized within an industry as having expertise in a specific occupation, and who also have training in teaching techniques and adult learning styles, which may occur before or after the apprenticeship instructor has started to provide the related technical instruction. Further, the Sponsor / Program Coordinator certifies the information above is true and correct.

3/16/2023 \_\_\_\_\_  
 Date Signature of Sponsor / Program Coordinator

**DO NOT WRITE BELOW THIS LINE**

Received By: \_\_\_\_\_ Date \_\_\_\_\_  
 State Apprenticeship Director