

STANDARDS OF APPRENTICESHIP  
Adopted by

**SOUTHERN WILLAMETTE VALLEY LIMITED ENERGY JATC**

<u>Occupational Title:</u>	<u>SIC #</u>	<u>SOC #</u>	<u>SYMBOL</u>	<u>SUFFIX</u>	<u>Term</u>
<b>Limited Energy Technician A</b>	<b>1731</b>	<b>47-2111</b>	<b>0459</b>	<b>000</b>	<b>6,000 OJT hours</b>

MA#: **3022**    SOC Title: **ELECTRICIANS**    License: **Limited Energy  
Technician - Class A**



APPROVED BY THE  
Oregon State Apprenticeship and Training Council (OSATC)

Registered with the

Apprenticeship and Training Division  
Oregon Bureau of Labor and Industries  
800 NE Oregon Street  
Portland, Oregon 97232

APPROVAL:

JUNE 4, 1982  
Initial Approval Date

JANUARY 1, 2022  
Last Revision Date

By:

VAL HOYLE  
Chair of OSATC

LISA J. RANSOM  
Secretary of OSATC

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Appendices A – H contain information specific to this program.

## Introduction – Apprenticeship Standards

The Oregon State Apprenticeship and Training Council (OSATC) has the authority, under the direction of the Apprenticeship and Training Division, to develop, administer, and enforce apprenticeship program standards (Standards) for the operation and success of an apprenticeship or on-the-job training program in the State of Oregon. Apprenticeship programs and committees function to administer, exercise or relinquish authority only with the consent of the OSATC. Only apprentices registered with or recognized by the Oregon Bureau of Labor and Industries (BOLI), Apprenticeship and Training Division (ATD) will be recognized by the OSATC. Parties' signatory to these apprenticeship standards declare that their purpose and policy is to establish and sponsor an organized system of registered apprenticeship and training education.

These Standards are in conformity with and are to be used in conjunction with the Apprenticeship Rules, Chapter 839-011 OAR (Oregon Administrative Rules); Apprenticeship and Training Statutes, Chapter 660 ORS (Oregon Revised Statute); The National Apprenticeship Act, 29 U.S.C. (United States Code) 50; Apprenticeship Programs, Title 29 Part 29 CFR (Code of Federal Regulations); and Equal Employment Opportunity in Apprenticeship and Training, Title 29 Part 30 CFR which collectively govern the employment and training in apprenticeable occupations. They are part of the apprenticeship agreement and bind all signers to compliance with all provisions of registered apprenticeship.

If approved by the OSATC, such amendment(s) and such changes as adopted by the OSATC shall be binding to all parties on the first day of the month following such approval. Sponsors shall notify apprentices and training agents of changes as they are adopted by the OSATC. If and when any part of these Standards becomes illegal, as it pertains to federal and/or state law, that part and that part alone will become inoperative and null and void, and the Oregon Bureau of Labor and Industries (BOLI) may recommend language that will conform to applicable law for adoption by the OSATC. The remainder of the Standards will remain in full force and effect.

See ORS Chapter 660.010 & OAR 839-011-0070 for the definitions of terms used within these Standards.

**Notes:** The body of this document contains boilerplate language that applies to all registered apprenticeship programs in the State of Oregon. Boilerplate language may only be modified by the Oregon State Apprenticeship and Training Council.

Appendices A-H are specific to the individual standard and may be modified by the sponsor by submitting a revised standard for approval by the Oregon State Apprenticeship and Training Council or by the Apprenticeship and Training Division (ATD) with concurrence from OSATC where permitted by ORS 660 and OAR 839-011.

**1. GEOGRAPHIC AREA COVERED:**

These standards establish the apprenticeable occupation to be taught and designate the geographical area or areas in which the standards will apply. (ORS 660.126) The Sponsor shall have a plan to ensure that participating employers will provide work in all areas covered by the program standards (OAR 839-011-0084). The Sponsor shall ensure compliance with the provisions for and of any Reciprocity Agreement recognized by the OSATC. (ORS 660.120 / OAR 839-011-0260)

**The geographic area covered by these standards are located in Appendix A: Geographical Area.** ([Ctrl + Click to follow link](#))

**2. MINIMUM QUALIFICATIONS:**

Minimum qualifications, including a minimum age of at least 16, must be clearly stated, comply with federal and state regulations, and be applied in a nondiscriminatory manner (ORS 660.126 (1b)). The Sponsor shall maintain documentation for all minimum qualifications for any apprentice who is registered.

**Minimum Qualifications for this standard are located in Appendix B: Minimum Qualifications.** ([Ctrl + Click to follow link](#))

**3. OREGON PLAN for EQUAL EMPLOYMENT OPPORTUNITY IN APPRENTICESHIP (OAR 839-011-0200) – PROGRAM OBLIGATIONS:**

Standards must include the Oregon Equal Employment Opportunity in Apprenticeship and Training Pledge as specified in the Oregon Plan for Equal Employment Opportunity in Registered Apprenticeship Programs (OPEEO) Section 3(h)(i).

**EEO PLEDGE**

**SOUTHERN WILLAMETTE VALLEY LIMITED ENERGY JATC** shall not discriminate against apprenticeship applicants or apprentices based on race, color, religion, national origin, sex (including pregnancy and gender identity), sexual orientation, genetic information, or because they are an individual with a disability or a person 18 years old or older. **SOUTHERN WILLAMETTE VALLEY LIMITED ENERGY JATC** shall take affirmative action to provide equal opportunity in apprenticeship and shall operate the apprenticeship program as required under these rules and Title 29 CFR, part 30.

Sponsors with five (5) or more apprentices must adopt an Equal Employment Opportunity Plan and Selection Procedures and submit the plan for OSATC approval. (OAR 839-011-0200 / OPEEO Sections 4 & 10).

**A. EQUAL EMPLOYMENT OPPORTUNITY PLAN:**

- i. A Sponsor's commitment to equal opportunity in recruitment, selection, employment and training of apprentices shall include the adoption of a written affirmative action plan. (OAR 839-011-0200 / OPEEO section 8). Each Sponsor required under OPEEO section 4 to

develop and maintain an EEO program must retain both the written EEO plan and documentation of its component elements set forth in OPEEO sections 5, 6, 7, 8, 9, and 11.

- ii. In addition, the sponsor will set forth the specific steps that it will take under this plan, review and update the specific steps that it will take to implement the plan at least yearly and submit the updated steps to the Apprenticeship and Training Division (ATD) for review and approval. (OPEEO section 8)
- iii. Numerical utilization goals for the selection of minorities, females, and individuals with disabilities for apprenticeship shall be submitted to ATD at least every three (3) years and prior to the date that any previous goals expire. (OPEEO sections 6 & 7).
- iv. The sponsor hereby adopts the following activities, at a minimum, in order to generate an increase in applications for apprenticeship and improve retention of apprentices from the targeted groups and/or individuals with disabilities:

- a. RECRUITMENT

Advertising openings for apprenticeship opportunities using methods and in locations that result in applications from candidates from the underutilized groups.

- b. OUTREACH

Dissemination of information to organizations serving underutilized groups regarding the nature of apprenticeship.

Cooperation with local school boards and career technical education systems to develop and/or establish relationships with pre-apprenticeship programs targeting students from the underutilized groups to prepare them to meet the standards and criteria required to qualify for entry into apprenticeship programs.

Establishment of formal agreements or partnerships enlisting the assistance and support of pre-apprenticeship programs, community-based organizations, advocacy organizations, or other appropriate organizations, in recruiting qualified individuals for apprenticeship.

- c. RETENTION:

Practices to retain targeted populations and maintain working and learning environments which supports current apprentices to remain with the program.

## B. SELECTION PROCEDURES:

Sponsors with five (5) or more apprentices must adopt a selection procedure and apply it uniformly to all applicants regardless of race, color, religion, national origin, sex, sexual orientation, age (18 or older), genetic information, and disability. (ORS 660.137 (3) / OPEEO section 10).

**Selection Procedures for this program are located in Appendix C: Selection Procedures.**  
[\(Ctrl + Click to follow link\)](#)

**C. DISCRIMINATION COMPLAINTS:**

- i. Any apprentice or applicant for apprenticeship who believes they have been discriminated against with regards to apprenticeship by the committee may file a complaint. (OAR 839-011-0200 / OPEEO Section 14)
- ii. The basis of the complaint may be:
  - a. Discrimination on the basis of race, sex, color, religion, national origin, age, disability or as otherwise specified by law by a sponsor or a sponsor's program
  - b. The equal employment opportunity plan has not been followed; or
  - c. The Sponsor's equal employment opportunity plan does not comply with the requirements of the Oregon Equal Employment Opportunity in Apprenticeship Plan.
- iii. Generally, a complaint must be filed within three hundred (300) days of the alleged discrimination or specified failure to follow the equal opportunity standards. However, for good cause shown, the Registration Agency may extend the filing time.
- iv. The written complaint must include the name, address and telephone number of the person allegedly discriminated against, the sponsor involved and a description of the circumstances of the complaint, a short description of the events that took place, and the complainant's signature.
- v. For complaints dealing with program operations see section 10 (Administrative Disciplinary Procedures) of this standard.

**4. TERM of APPRENTICESHIP:**

- A. The term of apprenticeship, which for an individual apprentice may be measured either through the completion of the industry standard for on-the-job learning (at least 2,000 hours in the time-based approach), the attainment of competency (competency-based approach), or a blend of the time-based and competency-based approaches (hybrid approach).
- B. The time-based approach measures skill acquisition through the individual apprentice's completion of at least 2,000 hours of on-the-job learning as described in a work process schedule.
  - i. The term of apprenticeship for a time-based approach must be stated in hours unless otherwise required by a collective bargaining agreement, civil service or other governing regulation. (ORS 660.126)
- C. The competency-based approach measures skill acquisition through the individual apprentice's successful demonstration of acquired skills and knowledge, as verified by the program sponsor. Programs utilizing this approach must still require apprentices to complete an on-the-job learning component of Registered Apprenticeship. The program standards must address how on-the-job

learning will be integrated into the program, describe competencies, and identify an appropriate means of testing and evaluation for such competencies.

- D. The hybrid approach measures the individual apprentice's skill acquisition through a combination of specified minimum number of hours of on-the-job learning and the successful demonstration of competency as described in a work process schedule. (Title 29 Part 29(5)(b)(2) CFR) OAR 839-011-0084(A)(B)(C))
- E. When the apprentice is granted advanced standing, the employer must pay the apprentice at the appropriate wage per the wage progression schedule specified in these standards or higher. (ORS 660.142)

NOTE: In licensed occupations the apprentice must complete the minimum hours of documented legal experience.

**The term of apprenticeship for this program is located in Appendix D: Term, Probationary Period, Ratio. ([Ctrl + Click to follow link](#))**

#### 5. **INITIAL PROBATIONARY PERIOD:**

- A. All apprentices are subject to an initial probationary period, stated in hours of employment, beginning on the effective date of the apprentice's current registration into the program. During this time, the apprentice's appeal rights are restricted, and the Sponsor may terminate an apprenticeship agreement without cause. (ORS 660.126 (1g))
- B. The initial probationary period must be reasonable in relationship to the full term of the apprenticeship unless otherwise required by Civil Service, Collective Bargaining Agreement (CBA) or law. It cannot exceed one year (12 months) or 25 percent of the length of the program, whichever is shorter. (ORS 660.126 (1g))
- C. During the initial probationary period either party to the agreement may terminate the apprenticeship agreement upon written notice to the Apprenticeship and Training Division of the Oregon Bureau of Labor and Industries. (ORS 660.126 (1g) & ORS 660.060 (6))
- D. Full appeal rights are available to apprentices who have completed the initial probationary period. After the probationary period the Sponsor may only suspend, cancel or terminate the apprenticeship agreement for good cause, with prior written notice to the apprentice, and with written notice to the apprentice and to the Apprenticeship and Training Division of the Bureau of Labor and Industries of the final action taken by the committee. (ORS 660.060 (6) & (7) and section 10 of this standard)

**The probationary period for this program is located in Appendix D: Term, Probationary Period, Ratio. ([Ctrl + Click to follow link](#))**

#### 6. **RATIO OF APPRENTICES TO JOURNEY LEVEL WORKERS**

- A. There shall be a maximum numeric ratio of apprentices to journey-level workers consistent with proper supervision, training, safety and continuity of employment. (ORS 660.126 (1f))

- B. The ratio shall be specifically and clearly stated as to its application to the job site, workforce, department, shift, plant or combination therein. (ORS 660.126 (1f))
- C. To ensure safety and training in all phases of the work, the Sponsor and its Training Agents shall ensure that apprentices are under the supervision of competent and qualified journey-level workers on the job who are responsible for the work being performed. (ORS 660.126 (1f), ORS 660.137 (5), OAR 839-011-0143)

**The ratio of apprentices to journey level workers for this program is located in Appendix D: Term, Probationary Period, Ratio. ([Ctrl + Click to follow link](#))**

**7. APPRENTICE WAGES and WAGE PROGRESSION:**

- A. The apprentice shall be paid according to a progressively increasing schedule of wage based on specified percentages of the average journey-level wage consistent with skills acquired. (ORS 660.126 (1h), OAR 839-011-0082(6a), OAR 839-011-0093, & OAR 839-011-0310)
- B. Wage progressions shall be indicated in hourly or monthly periods (the registration agency recommends the use of hour periods) set by the Sponsor. (ORS 660.126 (1h))
- C. The entry wage listed in this standard shall not be less than the federal or state minimum wage rate for the region covered by the geographical jurisdiction by that standard, whichever is higher. (ORS 660.142 (4))
- D. The wage listed in this standard at all periods establishes a minimum, but a higher wage shall be paid if it is required by other applicable federal law, state law, respective regulations, or by a collective bargaining agreement. (ORS 660.126 (1h), ORS 660.137 (6), ORS 660.142 & OAR 839-011-310 (3))
- E. The sponsor must re-determine the average journey-level wage at least annually and submit the new average journey wage to the Director of the Apprenticeship and Training Division with a statement explaining how such determination was made and the effective date of the new average journey wage. (ORS 660.137 (6))
- F. Upon receipt of a committee's determination of its current journey worker hourly wage rate, the Director, the Division shall notify all training agents and apprentices of the new wage. (ORS 660.142 (2))

**The average wage and wage progression for this apprenticeship standard are located in Appendix E: Wage and Wage Progression. ([Ctrl + Click to follow link](#))**

**8. WORK PROCESSES:**

- A. The Sponsor shall provide the necessary instruction and experience for apprentices to become journey-level workers versed in the theory and practice of the occupation. (ORS 660.137 / OAR 839-011-0270(1b))
- B. The Sponsor shall require the approximate hours listed in the standard's Work Processes as closely as conditions will permit for every apprentice. A Sponsor unable to provide an apprentice



with work experience equaling at least 50% of the hours listed in any of the work processes must provide and document additional related training to compensate for the lack of on-the-job training. (ORS 660.126 (1e), OAR 839-011-0084(3b), and OAR 839-011-0265(1))

NOTE: In licensed occupations apprentices must complete the minimum required total hours prior to being referred to the license examination. (OAR 839-011-0265(2))

**Work processes for this program are located in Appendix F: Work Processes.** ([Ctrl + Click to follow link](#))

9. **RELATED TRAINING:**

- A. The apprentice must attend related/supplemental instruction for at least 144 hours per year unless otherwise stated in this standard. Time spent in related/supplemental instruction will not be considered as hours of work, and the apprentice is not required to be paid for time so spent except where the training agent states by policy or CBA whether and under what circumstances an apprentice is entitled to be financially compensated for attending related instruction. (ORS 660.126 (1e), ORS 660.157, OAR 839-011-0084, and OAR 839-011-0088(1b))
- B. The Committee must provide for instruction of the apprentice during the related/supplemental instruction in safe and healthful work practices in compliance with the Oregon OSHA regulations and applicable federal and/or state regulations. (ORS 660.137 / OAR 839-011-0082 (6a), OAR 839-011-0084, & OAR 839-011-0310)
- C. In case of failure on the part of any apprentice to fulfill the related instruction obligation, the sponsor has the authority to withhold the apprentice's periodic wage advancement; or with a reasonable opportunity to remedy deficiencies, suspend, or cancel the Apprenticeship Agreement. (ORS 660.137 (4))
- D. Clock hours of actual attendance by the apprentice in related/supplemental instruction classes at the community college, training trust or other approved training provider shall be documented and tracked by the Committee. (ORS 660.137 (2a))
- E. Related instruction activities must be at the direction of a qualified instructor. (ORS 660.120 (3), ORS 660.157 (5), ORS 660.160, OAR 839-011-0084 (3f))

The Sponsor must identify the methods of related/supplemental training must consist of one or more of the following: (ORS 660.120 (3), ORS 660.157, OAR 839-011-0084 (3f)).

A minimum number of 144 hours per year are required unless the program has received a waiver from the Oregon State Apprenticeship and Training Council. (ORS 660.157(2))

**A summary of related training topics, hours, and methods are located in Appendix G: Related Training.** ([Ctrl + Click to follow link](#))

10. **ADMINISTRATIVE/DISCIPLINARY PROCEDURES:**

- A. The Sponsor shall administer its program in conformity with its approved standards, with the provisions of ORS 660.002 to 660.210, and with the rules and policies of the council and the division. The Sponsor shall establish policies to meet these requirements and list them in this

section. The Sponsor shall maintain a separate document for the procedures it will utilize to implement its policies. (ORS 660.137 (2) and OAR 839-011-0073)

- B. The committee may include provisions for committee-imposed “disciplinary probation,” which is a time assessed when the apprentice’s progress is not satisfactory; a “disciplinary probation” may only be used to provide an opportunity for the apprentice to correct deficiencies and cannot affect the apprentice’s appeal rights after the initial probation is completed. (ORS 660.137 (4))
- C. During disciplinary probation the committee may withhold periodic wage advancements, suspend or cancel the apprenticeship agreement, or take other disciplinary action. (ORS 660.137 (4))
- D. The apprentice has the right to file an appeal of the committee’s disciplinary action with the Director of the Apprenticeship and Training Division. (ORS 660.120, OAR 839-011-0090 and OAR 839-011-0093)
- E. Complaint and Appeal Procedures:
  - i. Each committee shall adopt and submit complaint review procedures for Division approval. (OAR 839-011-0084 (3g))
  - ii. All approved committees are expected to administer the program’s approved complaint review process in a fair and consistent manner. (ORS 660.120, ORS 660.060 & OPEEO Section 14)
  - iii. Complaints that involve matters covered by a collective bargaining agreement are not subject to the complaint review procedures in this section. (ORS 660.126 (2))
  - iv. After the initial probationary period the apprenticeship agreement may be canceled by a written request from the apprentice. (ORS 660.126 (1g) ORS 660.060 (7))
  - v. After the initial probationary period the committee may only suspend, cancel or terminate the apprentice agreement for good cause, which includes but is not limited to: failure to report to work, nonattendance at related instruction, failure to submit work progress reports and lack of response to committee citations. (ORS 660.060 (7))
    - a. Due notice and a reasonable opportunity for correction must be provided to the apprentice.
    - b. Upon suspension a written notice must be provided to the apprentice and to the Apprenticeship and Training Division.
    - c. Upon cancellation a written notice must be provided to the apprentice and to the Apprenticeship and Training Division.
  - vi. Each committee shall utilize the following procedures and timelines for disciplinary action (cancellation or termination). Committees may adopt and submit alternate complaint procedures, for Division review and approval, providing the procedures are reasonably expected to offer equal protection to the apprentice. (ORS 660.137, OAR 839-011-0175)
    - a. At least 22 days prior to potential disciplinary action by a committee (OAR 839-011-0175):
      - The committee must notify the apprentice in writing of alleged reason for the proposed disciplinary action and potential action to be taken if the allegation is substantiated

- The decisions are effective immediately upon committee action
  - The committee will send written reason(s) for such action to the apprentice by registered or certified mail and will include the appeal rights of the apprentice.
- b. Within 30 days of receipt of committee decision the apprentice may request reconsideration of the action taken by the committee
- The apprentice's request for the local committee to reconsider their disciplinary action must be submitted in writing and must include the reason(s) the apprentice believes the committee should reconsider the disciplinary action.
- vii. Within 30 days of apprentice's request for reconsideration
- The local committee must provide written notification of their final decision including the appeal rights of the apprentice if the committee upholds its decision on the disciplinary action
- viii. If the apprentice chooses to pursue the complaint further
- a. Within 30 days of notification of the committee's final action
- The apprentice must submit the complaint describing in writing the issues associated with the disciplinary action to the Director of the Apprenticeship and Training Division
  - The apprentice must describe the controversy and provide any backup information
  - The apprentice must also provide this information to the local committee/organization
- b. Within 60 working days the Director of the Apprenticeship and Training Division will complete a review of the record
- If no settlement is agreed upon during review, the Director must issue a non-binding written decision resolving the controversy.
- ix. If the apprentice or local committee disputes the Director's decision
- a. Within 30 days of Director's decision the dissenting party must submit a request for the OSATC to hear its case
- Request must be in writing
  - Must specify reasons supporting the request
  - Request and supporting documents must be given to all parties
  - OSATC Rules and Policy Sub-Committee conducts hearing within 45 days and reports its findings to the next regular quarterly meeting of the OSATC
  - The OSATC renders a decision based on the sub-committee's report.
- b. Within 30 days of the OSATC meeting
- The Secretary of the OSATC issues the decision in writing.

## 11. **COMMITTEE – RESPONSIBILITIES AND COMPOSITION**

The following is an overview of the requirements associated with administering an apprenticeship committee and/or program. These provisions are to be used in conjunction with the corresponding ORS and/or OAR.

- A. The committee is the policymaking and administrative body responsible for the operation and success of this Apprenticeship program.

- B. The committee is responsible for the day-to-day operation of the apprenticeship program and must be knowledgeable in the application of Chapter 660 ORS, OAR 839 division 011 and other law and rule as appropriate to the occupation(s).
- C. Sponsors must develop policies and procedures for committee operations and provide a copy to registered apprentices (ORS 660.060 (8), ORS 660.135, ORS 660.137, OAR 839-011-0170, and OAR 839-011-0310 (1b)). The committee's specific policies pertaining to the operation of the program are included in this standard. The procedures for the implementation of the approved policies are maintained by the committee. After approval by the division the approved procedures shall be distributed to all apprentices and training agents.
- D. Committees shall meet as often as is necessary to transact business and at least semi-annually with a quorum in order to review and evaluate the progress of each apprentice. (ORS 660.137 (4) and ORS 660.145)
- i. A quorum shall consist of at least two (2) members representing the employers and two (2) members representing the employees. (ORS 660.135 (3), ORS 660.145)
  - ii. Sponsors must hold a physical meeting for all disciplinary actions. Electronic polling is prohibited for issues requiring the personal appearance of applicants, apprentices, trainees, training agents or employers. (OAR 839-011-0170)
  - iii. Minutes of all meetings must be submitted to the Apprenticeship and Training Division within 10 working days of the meeting. (OAR 839-011-0170)
- E. Program Operations (ORS 660.135, ORS 660.137, OAR 839-011-0170, OAR 839-011-0200):
- i. The Committee will record and maintain records pertaining to the local administration of its Apprenticeship Program and make them available to the OSATC or its representative on request.
    - a. These records include, but are not limited to:
      - Selection of applicants
      - Administration of the apprenticeship program
      - Affirmative action plans
      - Documentation necessary to establish a sponsor's good faith effort in implementing its affirmative action plan
      - Qualification standards
    - ii. Records required by the Oregon Equal Employment Opportunity in Apprenticeship Plan (OAR 839-011-0200) will be maintained for five (5) years; all other records will be maintained for five (5) years after the final action taken by the committee on the apprenticeship agreement.

The following must be submitted by all programs through the Oregon Apprenticeship Tracking System (OATS) apprenticeship management portal:

- i. Apprenticeship Registration Agreement – within the first 45 days of employment as an apprentice. (ORS 660.020, OAR 839-011-0088) (In licensed occupations registration must occur prior to employment in the trade)

- ii. Committee Minutes – within 10 working days of the meeting. (OAR 839-011-0170)
- iii. Authorized Training Agent Agreements – with the meeting minutes at which they are approved. (ORS 660.020, OAR 839-011-0162)
  - Interim recognition may be authorized by committee policy but may not exceed 45 calendar days.
  - Any recognition of a training agent prior to formal action of the committee must be in conformance with the committee's OSATC approved policy.
- iv. Revision of Occupation Standards - as necessary, no later than 45 days prior to OSATC meeting. (OAR 839-011-0030) (Programs should review their Standards at least annually)
- v. Revision of Committee Member Composition as necessary (included in committee minutes). (OAR 839-011-0074)
- vi. Average Journey Level Wage – at least annually or whenever changed (included in committee meeting minutes with a summary of how the average wage was determined). (ORS 660.137 (6), ORS 660.142)
- vii. Adopt, as necessary or as directed, local program policies and procedures for the administration of the apprenticeship program in compliance with this Standard. (ORS 660.060 (9), ORS 660.120 (4a), OAR 839-011-0073)
  - Policies must be submitted to the OSATC for review and approval.
  - Procedures must be submitted for Division (ATD) approval and inclusion by reference in this Standard prior to implementation.
- viii. Authorization for issuance of initial license may be granted after the committee is found to be in compliance for operational purposes.
- ix. Forms are available from the Apprenticeship and Training Division. If approved by the OSATC, such amendment(s) and such changes as adopted by the OSATC will be binding to all parties on the first day of the month following OSATC approval.

F. Apprentice Management:

- i. Applicants accepted by the committee, who have documented legal experience creditable to the apprenticeship in the skilled occupation or in some other related capacity, may be granted advanced standing as apprentices. (OAR 839-011-0088 (3a)) Apprentices admitted to advanced standing will be paid the wage rate for the period to which such credit advances them. In licensed occupations previous credit must be documented legal experience. (OAR 839-011-0088 (3b))
- ii. Each apprentice (and, if under 18 years of age, the parent or guardian) will sign an Apprenticeship Agreement with the Sponsor, who will then register the Agreement, with the Apprenticeship and Training Division of the Bureau of Labor and Industries within the first 45 days of employment as an apprentice. (ORS 660.020 (1), ORS 660.060, OAR 839-011-0088)
- iii. The Sponsor shall provide a copy of the committee meeting minutes approving any change of disposition or modification of the Registration Agreement to the Apprenticeship and Training Division within 10 working days of the committee meeting. (OAR 839-011-0170)

- a. Requests for disposition or modification of Agreements include: (1) Certificate of completion, (2) Additional credit, (3) Suspension, military service, or other, (4) Reinstatement, (5) Cancellation, (6) Re-rates, (7) Holds, (8) Examination Referral, (9) Corrections, (10) Limited Supervision-electrical, (11) Phased Supervision-plumbing.
- iv. Rotate apprentices in the various processes of the skilled occupation to ensure the apprentice is trained to be a competent journey-level worker. (ORS 660.137 (2c), OAR 839-011-0265.
- v. At least once every six months the sponsor must review and evaluate each apprentice's progress and take action to advance based on the apprentice's progress or hold the apprentice at the same level for a reasonable period and opportunity for corrective action or terminate for continued inadequate progress. (ORS 660.137 (4))
- vi. The evidence of such action will be the record of the apprentice's progress on the job and during related/supplemental instruction.
  - a. If the apprentice's progress is not satisfactory, the committee has the obligation to withhold the apprentice's periodic wage advancements, suspend or cancel the Apprenticeship Agreement, or take other disciplinary action as established under the "Administrative/Disciplinary Procedures."
- vii. The Sponsor has the obligation and responsibility to provide, within the constraints of industry and market conditions, reasonably continuous employment for all apprentices in the program. (ORS 660.126, ORS 660.020, and OAR 839-011-0310 (2))
  - a. The committee may arrange to transfer an apprentice from one training agent to another or to another committee when the committee is unable to provide reasonably continuous employment, or they are unable to provide apprentices the diversity of experience necessary for training and experience in the various work processes as stated in this Standard.
  - b. If, for any reason, a layoff of an apprentice occurs, the Apprenticeship Agreement will remain in effect unless canceled by the committee.
- viii. An apprentice who is unable to perform the on-the-job portion of apprenticeship training may, if the apprentice so requests and the committee approves, participate in related/supplemental instruction classes, subject to the apprentice obtaining and providing written medical approval for such participation. However, time spent will not be applied toward the on-the-job portion of apprenticeship training. (ORS 660.126 (i))
- ix. The Sponsor shall hear and address all complaints of violations of apprenticeship agreements. (ORS 660.137)
- x. Upon successful completion of apprenticeship, as provided in these Standards, and passing any examination that the committee may require, the committee will recommend that the Oregon Commissioner of Labor award a Certificate of Completion of Apprenticeship. (ORS 660.137, ORS 660.205)

#### G. Training Agent Management:

- i. The Sponsor shall afford all employers and their qualified employees the opportunity to participate, on a non-discriminatory basis, in existing programs. (OAR 839-011-0084 (2))
- ii. The Sponsor shall provide equal treatment and opportunity for all apprentices through reasonable working and training conditions and apply those conditions to all apprentices uniformly. (OAR 839-011-0200)
- iii. The Sponsor shall provide training agents and prospective training agents with a written statement of costs for program participation. (OAR 839-011-0084(3c))
- iv. The Sponsor shall not require an employer to sign a collective bargaining agreement or join an association as a condition of participation. (OAR 839-011-0162 (3))
- v. The Sponsor shall determine the adequacy of an employer to furnish proper on-the-job training in accordance with the provisions of these Standards. (ORS 660.137(5))
- vi. The Sponsor shall require all employers requesting approved training agent status to complete a training agent application and comply with all Oregon State apprenticeship laws and the appropriate apprenticeship Standards. (ORS 660.137(5))
- vii. The Sponsor shall submit approved training agent agreements to the Apprenticeship and Training Division within ten (10) working days of committee approval with a copy of the agreement and/or the list of approved training agents and committee minutes where approval was granted. (OAR 839-011-0170)
- viii. The Sponsor shall make periodic checks of approved training agents and withdraw approval when approval qualifications are no longer met or when it appears to the committee that the employer is in violation of the terms of the apprenticeship agreement, standards, rules, regulations and policies of the committee or OSATC. (ORS 660.137(5))
- ix. If a committee acts to withdraw training agent status from an employer, the action must be recorded in the committee minutes and submitted to the Apprenticeship and Training Division within 10 working days of the committee action. (OAR 839-011-0170)

H. OSATC Required Policies: (ORS 660.120 - ORS 660.137/OAR 839-011-0073)

- i. All local committees shall develop and administer operating policies and procedures to govern program operations as directed by the OSATC and administer such policies and procedures in a consistent manner. Policies and procedures will be approved by the committee and recorded in the meeting minutes.
- ii. When adopted or revised, the Sponsor shall submit these policies and procedures to ATD staff who will advise the Sponsor regarding their conformity with apprenticeship laws, rules and OSATC guidelines.
- iii. Committee policies and procedures must include the following written policies:
  - a. Credit for prior experience
  - b. OJT requirements (hours, work processes, rotation/partial rotation, monthly progress reports, timelines, applicable penalties)
  - c. Related training requirements (attendance, grades):

- d. Complaint procedures:
- e. Process for the review and evaluation of apprentice progress:
- f. Advancement requirements (re-rates, completions):
- g. Disciplinary process (appearances, holds, cancellations):
- h. Training agent requirements (approval, discipline, removal):
- i. Traveling training agent policy:
- j. Initial employment policy:
- k. Placement procedures for out-of-work apprentices:
- l. License requirements, including exam referral and completion requirements (for licensed trades only).

I. Composition of Committee:

- i. Joint apprenticeship and training committees must be composed of an equal number of employee and employer representatives composed of at least four principal members but no more than eight principal members. An alternate member may be appointed for each principal member. A quorum shall consist of at least two employer members and two employee members. (ORS 660.135; OAR 839-011-0074)
- ii. Trades apprenticeship and training committees must be composed of an equal number of employee and employer representatives composed of one principal employee and one principal employer member for each occupation covered by the trades committee. An alternate member may be appointed for each principal member. A quorum shall consist of at least two employer members and two employee members. (ORS 660.145; OAR 839-011-0074)
- iii. Employee representatives shall
  - a. be skilled practitioners of the trade or occupation and be a member of the collective bargaining unit if a collective bargaining agreement exists for the trade or occupation that is the subject of the apprenticeship or training program administered by the committee (OAR 660.135); or
  - b. be a bargaining unit representative for the employees of a participating training agent (OAR 839-011-0074(1b)); and
  - c. not serve in a supervisory capacity as defined in the National Labor Relations Act, as amended. (OAR 839-011-0074(1b))
- iv. The committee shall elect a chairperson and a secretary from the committee members. One of the offices must be held by an employer member and one office must be held by an employee member. (OAR 839-011-0074(8))
- v. The Council or the Sponsor may remove committee members or officers for failure to abide by ORS 660 or the rules and policies of the OSATC or committee. (OAR 839-011-0078)

The program administered by this committee is a:

**JATC**  
(ORS 660.135) or (ORS660.145)

The employer representatives shall be: (See attached committee list)



The employee representatives shall be: (See attached committee list)

12. **SUBCOMMITTEE**

Subcommittee(s) may be approved by the sponsor but may only recommend actions to the parent Committee.

13. **PROGRAM CONTACT INFORMATION**

The Sponsor may employ a person(s) as a full or part-time Training Coordinator(s)/Training Director(s)/Administrator(s). This person(s) will assume responsibilities and authority for the operation of the program as are specifically delegated by the Sponsor. (ORS 660.135(5)) See Appendix H for this program's contact information.

**Program contact information is located in Appendix H: Program Contact. ([Ctrl + Click to follow link](#))**

**APPENDIX A: GEOGRAPHICAL AREA**

The geographic area covered by these standards are

**COOS COUNTY  
CURRY COUNTY  
DOUGLAS COUNTY  
JACKSON COUNTY  
JOSEPHINE COUNTY  
KLAMATH COUNTY  
LANE COUNTY**

in the State of Oregon.

**APPENDIX B: MINIMUM QUALIFICATIONS**

Minimum Qualifications for this standard are:

<b>Age:</b>	<b>Must be at least 17 years of age to apply and may not be registered until they are at least 18 years of age</b>
<b>Education:</b>	<b>1. Must be a high school graduate or have obtained the equivalent GED certificate. 2. Must have completed one year of high school algebra, integrated math 2, or equivalent post-high school algebra course(s) with a grade of C or better, or submit equivalent math placement test scores, a GED math score, obtained during or after 2014, of 150 is considered an equivalent.</b>
<b>Physical:</b>	<b>N/A</b>
<b>Testing:</b>	<b>None</b>
<b>Other:</b>	<b>None</b>

## APPENDIX C: SELECTION PROCEDURES

### Selection Procedure:

All out of work apprentices in good standing will be offered the opportunity for re-employment prior to new applicants being registered in conformance with the committee's approved initial employment policy.

The committee shall select apprentices from a pool of eligible applicants according to the following procedure:

### **Committee's Selection Procedures:**

NOTE: There are two (2) ways by which an applicant may apply to become an apprentice with this committee in this trade:

1. A governmental entity with either a civil service or merit selection process may select apprentices in accordance with its personnel rules or its collective bargaining agreement as adopted by its elected governing board.
2. Apply when the committee is open for applications, and being subsequently placed on the ranked list of applicants-available-for-hire.
  - a. Application Notice and Schedule
    - i. The sponsor shall open for applications when its current pool of eligibles (including out-of-work apprentices) in a given geographic area falls below the number established by committee action.
    - ii. The sponsor shall be open for a minimum of ten working days to accept applications.
    - iii. Prior to distributing notices, the proposed public notice shall be provided to the BOLI/ATD Portland office and to the assigned Apprenticeship Representative.
    - iv. Public notices shall be disseminated in accordance with the sponsor's Affirmative Action Plan. This notice shall be distributed not less than 30 days in advance of the first date applications will be accepted.
    - v. These items will be included on the public notice:
      - the trade/occupation
      - minimum qualifications
      - addresses where applications are available
      - dates, times and places where applications will be accepted
      - geographic area of employment
      - general description and duties of the occupation
      - documentation requirements to show evidence of minimum qualifications and to receive points for education and work history
      - program content and duration
      - description of application process
      - name and telephone number of contact person
  - b. Application Process
    - i. The sponsor can open and re-open the selection process by geographic areas and license endorsements to facilitate outreach in the areas where apprenticeship vacancies exist or are anticipated.
    - ii. The application form will provide a space for the applicant to indicate geographic availability as follows:
      - Lane County
      - Douglas County

- Josephine County
  - Jackson County
  - Klamath County
  - Curry County
  - Coos County
- iii. The application form will provide a space for applicants to indicate the endorsement(s) for which they wish to be considered.
  - iv. An application shall be provided to any interested individual.
  - v. The sponsor shall maintain a log, which will identify all applicants by a log number that corresponds to the application number. The log will be used to track the history of the application, noting the date the application was provided, the manner by which it was provided, the date it was returned to the program sponsor, and the final disposition of the application (rejected for MQ's, no documentation, unranked, in ranked pool of eligibles, etc.).
- c. Verification of Minimum Qualifications
    - i. All applications and supporting documentation will be reviewed to determine if minimum qualifications are met.
    - ii. Applicants who do not meet the minimum qualifications established in the public notice and standards will be notified in writing. Notification will include
      - the reason(s) for rejection;
      - requirements for admission into the eligibility pool; and
      - appeal rights available to the applicant.
  - d. Ranked Pool of Eligibles
    - i. Selection of apprentices will not occur until all applications received during the open application period have been rated and ranked.
    - ii. Individuals who complete the application and meet the minimum qualifications shall be ranked based upon the attached point system using documented previous experience and education and shall remain in the ranked pool of eligibles for two years.
    - iii. Individuals may be removed from the ranked pool at an earlier date by their request, following their failure to respond to a dispatch as established in the committee's initial placement policy or failure to keep their address and telephone number current with the committee. The committee may at its discretion restore an applicant who has been removed from the pool at his/her request or who has failed to accept an employment offer.
  - e. Placement Process
    - i. Prior to selecting new apprentices, out-of-work apprentices will be given the opportunity for employment in descending order based on the total number of OJT hours in the program.
    - ii. Individuals in the ranked pool of eligibles will be dispatched in descending score order based on their endorsement preference (if applicable) and geographic availability for the training agent's place of business.
    - iii. Individuals in the ranked pool of eligibles will be selected in descending order. If a training agent rejects an eligible or an out-of-work apprentice, the training agent must provide the committee with a written, job-related reason that is consistent with the training agent's documented employment policies and applicable State and Federal EEO requirements.
    - iv. When apprentices are hired, the sponsor will complete the apprenticeship agreement and submit it to the Bureau of Labor and Industries as soon as practical to initiate the issuance of a license. Electrical apprentices must be registered and receive an apprentice electrical license before accruing OJT hours or performing electrical tasks.

Appendix: Application rating for Industrial Instrument Technician <sup>1</sup>

RATING FACTOR	Points
<b>GENERAL EDUCATIONAL BACKGROUND</b>	
a. The greater of the following:	
i. GED	6
OR	
ii. HS diploma	6
And the greatest of the following:	
iii. Trade School Diploma (at least a 9-month program)	5
OR	
iv. Two Year Community College Degree	8
OR	
v. Four Year College Degree	12
<b>Maximum points allowed for section a</b>	<b>18</b>
b. Math classes with a grade of “C” or higher or “P”	
2 semesters of Algebra I or equivalent post High School or College placement test results	6
i. Algebra II	3/sem or 2/qtr credit
ii. Geometry	3/sem or 2/qtr credit
iii. Trigonometry	3/sem or 2/qtr credit
iv. Shop Math	3/sem or 2/qtr credit
v. Calculus	3/sem or 2/qtr credit
<b>Maximum points allowed for section b</b>	<b>20</b>
c. Classes that require ability to follow written instructions to produce hands-on projects or classes that provide relevant theory with a grade of “C” or “Pass”	
i. Electronics or basic electricity	5/sem or 3.3/qtr credit
ii. Physics	5/sem or 3.3/qtr credit
iii. Drafting/Blueprint reading	4/sem or 2.7 qtr credit
iv. Industrial Arts (woodshop, welding, etc.)	4/sem or 2.7 qtr credit
v. Home Economics	3/sem or 2/qtr credit
vi. Mechanical Drawing or CAD	3/sem or 2/qtr credit
vii. Graphic Design	3/sem or 2/qtr credit
viii. First Aid certification	2/credit
ix. CPR certification	2/credit
<b>Maximum points allowed for section c</b>	<b>20</b>

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<sup>1</sup> Points will be awarded based on credible documentation provided by the applicant. Examples of acceptable documentation include academic transcripts, grade reports, W-2 forms, DD-214, certificates, and letters on organizational letterhead.

**WORK EXPERIENCE AND TRADE PREPARATION**

d. Pre-apprenticeship experience	
i. Successful completion of Lane Community College’s “Trade Skills Class” or equivalent	7
And the greatest of the following:	
ii. Currently employed by a training agent approved to train electricians registered to this committee. Must also be working during the prior two months a minimum of 30 hours per week in a capacity related to the training agent’s primary business at the time of application to the designated ranked hiring pool;	8
OR	
iii. Currently employed by a training agent approved to train electricians registered to another apprenticeship committee in Oregon. Must also be working during the prior two months a minimum of 30 hours per week in a capacity related to the training agent’s primary business at the time of application to the designated ranked hiring pool;	7
OR	
iv. Currently employed by a training agent approved to train in non-electrical trades registered to another apprenticeship committee in Oregon. Must also be working during the prior two months a minimum of 30 hours per week in a capacity related to the training agent’s primary business at the time of application to the designated ranked hiring pool;	6
<b>Maximum points allowed for section d</b>	<b>15</b>
e. Work experience related to the trade <sup>2</sup> (electrical helper, electrical warehouse worker, or dispatcher). Experience may be military, civilian, or volunteer.	6/1000 hours
<b>Maximum points allowed for section e</b>	<b>24</b>
f. General construction work experience. Experience may be military, civilian, or volunteer.	4/1000 hours
<b>Maximum points allowed for section f</b>	<b>16</b>
g. Work experience not related to construction. Experience may be military, civilian, or volunteer.	2/1000 hours
<b>Maximum points allowed for section g</b>	<b>8</b>
<b>Maximum points for ranking</b>	<b>121</b>

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<sup>2</sup> 1,000 hours is equal to 6 months full-time employment

**Exceptions:****2. EXPERIENCED APPRENTICE**

Experienced apprentices, who have earned at least 1,000 OJT hours and 48 hours of related training in a registered program within the past 5 years, may be permitted to enter or return to the program, as far as practical, and resume their training where they left off by being placed at the bottom of the out-of-work list, providing the apprentice meets the current minimum qualifications and left the previous program in good standing. It is understood that the previous program trains in the same occupation as the one to which the experienced apprentice is making application.

**3. NEW TRAINING AGENT**

If an employer has not participated in the training of an apprentice under ORS Chapter 660 for at least two years prior to requesting an apprentice, the employer may select apprentices from those bona fide employees who meet the minimum qualifications for entry into the program. A bona fide employee is one who has been on the employer's payroll and worked a minimum of 750 hours in the previous six months. Once the initial selection of apprentices has been made, the employer is thereafter restricted to selection from apprentices in the out-of-work pool and the ranked pool of eligibles.

**12. VETERAN'S ENTRY**

Veterans may apply to the program at any time if they meet the minimum qualifications of the program and if they are:

- a) Members of the Regular services who have been discharged from active duty service with a DD214 issued within the past 24 months indicating an Honorable Discharge;
- b) Members of the Selected Reserve or Individual Ready Reserve with a DD214 issued within the past 24 months; or
- c) Members of the Oregon National Guard with a DD214 issued within the past 24 months.

Individuals qualifying under this exception will be scored and placed at the top of the Ranked Pool of Eligibles



**APPENDIX D: TERM, PROBATIONARY PERIOD, RATIO**

**Term of Apprenticeship:**

This is a time-based apprenticeship standard. The term of this standard of apprenticeship shall be **6,000** hours of employment.

**Probationary Period:**

The probationary period shall be the first **1,000** OJT hours of employment, or one year after the current registration to this standard, whichever is shorter.  
(ORS 660.126 (g))

**Ratio:**

The ratio of apprentices to journey-level worker shall not be more than:

**One (1)** apprentice to the first **one (1)** journey-level worker on  
**the Job.**

Additional apprentices are authorized at a ratio of **one (1)** apprentice for each additional **one (1)** journey-level worker(s). (ORS 660.126 (f))

**APPENDIX E: WAGE AND WAGE PROGRESSION**

The average wage for those journey-level workers employed by the participating employers in this occupation on **AUGUST 1, 2023** is **\$36.56** per hour.

<b>Period</b>	<b>Number of required hours</b>	<b>% of the journey level rate</b>
<b>1<sup>st</sup></b>	<b>0-1000</b>	<b>60</b>
<b>2<sup>nd</sup></b>	<b>1001-2000</b>	<b>65</b>
<b>3<sup>rd</sup></b>	<b>2001-3000</b>	<b>70</b>
<b>4<sup>th</sup></b>	<b>3001-4000</b>	<b>75</b>
<b>5<sup>th</sup></b>	<b>4001-5000</b>	<b>80</b>
<b>6<sup>th</sup></b>	<b>5001-6000</b>	<b>85</b>

**APPENDIX F: WORK PROCESSES**

The work processes and approximate training hours in each area are:

<b>Work processes</b>	<b>Approximate hours</b>
<b>a.</b> Limited energy installations, including: <ol style="list-style-type: none"> <li>1) Stock room and materials (shop, service)</li> <li>2) Limited energy wiring (installation, wire pulling, splices, conduit, flex, tray and duct, control panels and controls, wiring devices, removal and finish work)</li> <li>3) Troubleshooting and maintenance</li> <li>4) Outdoor installation (overhead, underground)</li> </ol>	3,000
<b>b.</b> Limited energy applications, including: <ol style="list-style-type: none"> <li>1) Protective signaling—minimum 750 hours (includes: fire alarm, nurse call, security)</li> <li>2) Communication systems (includes: data telecommunication, intercom, paging)</li> <li>3) Specialized control systems (includes: HVAC, medical, boiler, clock, instrumentation)</li> </ol>	3,000
<b>TOTAL</b>	<b>6,000</b>

In licensed occupations apprentices must complete the minimum required total hours prior to being referred to the license examination. (OAR 839-011-0265(2)) (For electrical licenses, ORS 479.630 & OAR 918-282-0270) (For plumbing licenses, ORS 693.060 & OAR 918-695-0140)

Apprentices must complete a total of **6,000** hours of on-the-job training. However, the committee recognizes that most apprentices will not be able to fulfill the total amount of hours specified in every work process as set forth in this standard. When an apprentice is unable to fulfill the total work hours in each work process the committee will evaluate the apprentice's knowledge, skills and abilities and provide appropriate additional related instruction to assure that competency is acquired in each work process. The evaluation and summary of the additional instruction will be noted in the apprentice's file. (OAR 839-011-0265(1))

**APPENDIX G: RELATED TRAINING**

A minimum of **144** hours of related training shall be required during each year the apprentice is registered in the program. (ORS 660.126 (e) / ORS 660.175(2))

The following is a summary of related instruction including required class hours in each element of instruction. A committee may establish and submit clear objectives and outcomes in lieu of hours for each class subject. (ORS 660.157)

**Related training must cover the following subjects and must be completed with a grade of 'C' or better for graded classes or 'Pass' for non-graded classes. (OAR 918-282-0170 to -0365)**

Course	Hours
<b>a.</b> minimum of 288 hours to include all of the following components:	
<b>i.</b> Electrical mathematics	30
<b>ii.</b> Safety and accident prevention	45
<b>iii.</b> Care and use of hand and power tools	10
<b>iv.</b> Blueprint reading and electrical symbols	4
<b>v.</b> Introduction to the National Electrical Code	60
<b>vi.</b> Electrical fundamentals and basic theory, including AC and DC	15
<b>vii.</b> Electrical measuring devices	10
<b>viii.</b> Wiring methods	20
<b>ix.</b> Related electrical statutes and rules	48
<b>x.</b> Fundamentals of electronics	6
<b>xi.</b> Transformers	10
<b>xii.</b> Lighting circuits	12
<b>xiii.</b> Basic mechanics - applied physics and theory	18
<b>b.</b> A minimum of 144 hours to be distributed among each of the following areas, with no less than 48 hours per area:	
<b>i.</b> Fire & life safety systems, including fire alarm, protective signaling, nurse call	53
<b>ii.</b> Communication systems, including data telecommunication, intercom, paging	44
<b>iii.</b> Specialized control systems, including HVAC, medical, boiler, clock, instrumentation	47
<p>Program Objectives: The local committee has established measurement tools to verify that each apprentice has met the minimum competencies in each component listed below prior to referral to the electrical licensing examination:</p> <ul style="list-style-type: none"> <li><b>a.</b> Demonstrate math and algebra skills as they relate to the electrical trade</li> <li><b>b.</b> Demonstrate basic rules of safety and how they affect all people on the job</li> <li><b>c.</b> Demonstrate proper care and use of hand and power tools used in the electrical trade</li> <li><b>d.</b> Demonstrate working knowledge of architectural and electrical blueprints, including electrical symbols</li> <li><b>e.</b> Identify NEC articles that apply to assigned tasks</li> <li><b>f.</b> Demonstrate problem-solving with series and parallel AC and DC circuits</li> <li><b>g.</b> Perform system measurements testing and calibration</li> <li><b>h.</b> Demonstrate knowledge of low voltage structure wiring system design and installation</li> <li><b>i.</b> Demonstrate knowledge of Oregon electrical statutes and rules</li> </ul>	

- j.** Identify basic electronic components used in limited energy installations
- k.** Demonstrate knowledge of transformer theory and identify types of transformers
- l.** Demonstrate basic physical laws and how they relate to the electrical trade
- m.** Demonstrate knowledge of fire alarm, protective signaling, and nurse call system installations
- n.** Demonstrate basic knowledge of communication systems, including data telecommunication, intercom, and paging systems
- o.** Demonstrate basic knowledge of specialized control systems, including HVAC, medical, boiler, clock, and instrumentation control systems.

Methods of related/supplemental training shall consist of the following:

- Community college;

**APPENDIX H: PROGRAM CONTACT INFORMATION**

**ADMINISTRATOR/COORDINATOR Contact**

**Lou Long  
NW Apprenticeship Services, LLC**

**PO Box 1958  
Grants Pass, OR 97528**

**Tel: 541 279-1543**

**[nwapprenticeship@gmail.com](mailto:nwapprenticeship@gmail.com)  
[www.nwapprenticeship.org](http://www.nwapprenticeship.org)**