

For L&I Staff Use Only

Received 08/18/2025-CA
L&I Apprenticeship Consultant

Teri Gardner 8-18-25
L&I Admin

Department of Labor and Industries
Apprenticeship Section
PO Box 44530
Olympia WA 98504-4530



Request for Revision of Standards

TO: Washington State Apprenticeship & Training Council

FROM: IAM/Boeing Joint Apprenticeship Committee #154

Please update our Standards of Apprenticeship to reflect the following changes:

- Additions shall be underlined (underlined).
- Deletions shall be struck through (~~struck through~~).
- See attached.

Form must be signed by Committee Chair and Secretary or Program's Authorized Signer

<input type="checkbox"/> Chair	Date	<input type="checkbox"/> Secretary	Date
<input checked="" type="checkbox"/> Authorized Signer	08/11/2025		
Print Name: Raymond Miller		Print Name:	
Signature: <i>Raymond Miller</i>		Signature:	

Approved By: Washington State Apprenticeship & Training Council
Signature of Secretary of the WSATC:
Date:

Attach additional sheets if necessary

FROM: IAM/Boeing Joint Apprenticeship Committee #154

Occupational Objective(s):

SOC#

Term [WAC 296-05-015]

INDUSTRIAL MAINTENANCE ELECTRICIAN

47-2111.00

8000 HOURS

IV. TERM OF APPRENTICESHIP:

The term of apprenticeship will be 8,000 hours of reasonably continuous employment and experience in the principal operations of the trade for the following occupations:

Industrial Maintenance Electrician

VII: APPRENTICE WAGES AND WAGE PROGRESSION:

C. Wage Progression Schedules

For Facilities Crane Maintenance Mechanic; Industrial Maintenance Electrician; and Model Maker program.

VIII. WORK PROCESSES:

<u>E. Industrial Maintenance Electrician</u>	<u>Approximate Hours</u>
1. <u>Prime Power</u>	<u>2000</u>
2. <u>Electrical Safety</u>	<u>1500</u>
3. <u>Shop Work</u>	<u>600</u>
4. <u>General Wiring</u>	<u>1500</u>
5. <u>Industrial Controls</u>	<u>1800</u>
6. <u>Crane Controls</u>	<u>600</u>
	<u>Total Hours: 8,000</u>

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Journey Level Wage Rate
From which apprentices' wage
rates are computed

TO: Washington State Apprenticeship & Training Council
FROM: IAM/Boeing Joint Apprenticeship Committee #154

Occupation:	County(ies):	Journey Level Wage Rate:	Effective Date:
Industrial Maintenance Electrician	King, Pierce, Snohomish	\$ 55.65	08/11/2025
		\$	
		\$	
		\$	

Sponsors must submit the journey-level wage at least annually or whenever changed to the Department.

Form must be signed by Committee Chair and Secretary or Program's Authorized Signer

<input type="checkbox"/> Chair	Date	<input type="checkbox"/> Secretary	Date
<input checked="" type="checkbox"/> Authorized Signer	08/11/2025		
Print Name: Raymond Miller		Print Name:	
Signature: <i>Raymond Miller</i>		Signature:	

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Apprenticeship Related/Supplemental Instruction (RSI) Plan Review

Program Name IAM/Boeing Joint Apprenticeship Committee	
Occupation Industrial Maintenance Electrician	
Term/OJT Hours 8000	Total RSI Hours 610
Training Provider Boeing – customized course curriculum provided by NCCER	

By the signature placed below, the **program sponsor** agrees to provide the prescribed RSI for each registered apprentice and assures that:

1. The RSI content and delivery method is and remains reasonably consistent with the latest occupational practices, improvements, and technical advances.
2. The RSI is coordinated with the on-the-job work experience.
3. The RSI is provided in safe and healthful work practices in compliances with WISHA and applicable federal and state regulations.
4. The RSI Plan is maintained, updated and submitted to the Department a minimum of once every 5 years (WSATC Policy 2015-01; rev, 10-21-21).
5. The RSI will be conducted by instructors who meet the qualification of the “competent instructor” as described in WAC 296-05-003:
 - a. Has demonstrated a satisfactory employment performance in her/her occupation for a minimum of three years beyond the customary learning period for that occupation; and
 - b. Meets the State Board for Community and Technical Colleges requirements for a professional technical instructor (see WAC 131-16-080 through -094), or be a subject matter expert, which is an individual, such as a journey worker, who is recognized within the industry as having expertise in a specific occupation; and
 - c. Has training in teaching techniques and adult learning styles, which may occur before or within one year after the apprenticeship instructor has started to provide the related technical instruction.
6. If using alternative forms of instruction, such as correspondence, electronic media, or other self-study, instruction shall be clearly defined.

Signatures on next page

Form must be signed by Committee Chair *and* Secretary or Program's Authorized Signer

<input type="checkbox"/> Chair	Date	<input type="checkbox"/> Secretary	Date
<input checked="" type="checkbox"/> Authorized Signer	08/18/2025		
Print Name: Raymond Miller	Print Name:		
Signature:	Signature:		

Training Provider Signature

Approved By (Print Name): Shelley Wilson	Title: BPS Senior Leader
Signature of the Training Provider:	
Date: 08/18/2025	

If additional training providers are needed, go to page 4.

SBCTC

Print Name:	Title:
Signature of the Program Administrator:	
Date:	
<input type="checkbox"/> SBCTC recommends approval <input type="checkbox"/> SBCTC recommends return to sponsor	

Program Name IAM/Boeing Joint Apprenticeship Committee Program Name Program Name	Occupational Objective Industrial Maintenance Electrician
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Note: The description of each element must be in sufficient detail to provide adequate information for review by the SBCTC and Review Committee. To add more elements, click on the plus sign that appears below the "Description of Element/Course" field.

Describe minimum hours of study per year in terms of (check one):

- ☐ 12-month period from date of registration.
☒ Defined 12-month school year.
☐ 2,000 hours of on-the-job training.

Element/Course: Business Communication for Manufacturing-year-1	Planned Hours: 50
Mode of Instruction (check all that apply) <input type="checkbox"/> Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Online <input type="checkbox"/> Self-Study Provided by: Boeing	
Description of element/course: This instructor-led course focuses on developing job-ready skills for Apprentices in today's complex mobile and social workplace. This course will help Apprentices develop and strengthen vital communication skills that are critical in the manufacturing industry. These skills include effective verbal and written communication, critical thinking, and teamwork skills by utilizing the Microsoft Office Suite: Outlook, Word, Excel, and PowerPoint (all365). Proprietary Boeing applications and tasks like "InSite" and tie-ins will be covered in this course.	

Element/Course: Electrical Safety, Tools and Test Equipment - year-1	Planned Hours: 55
Mode of Instruction (check all that apply) <input type="checkbox"/> Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Online <input checked="" type="checkbox"/> Self-Study Provided by: Boeing	
Description of element/course: Discusses hazards and describes the various types of personal protective equipment (PPE) used to reduce injuries. Covers the standards related to electrical safety and the OSHA-mandated lockout/tagout rule. Covers the safety equipment and safety practices associated with the special hazard, including electrical and arc flash hazards; traffic control; trenching; working in confined spaces; and safe entry into a substation. Describes meter safety precautions and category ratings. Introduces the basic test equipment used by electrical workers to test and troubleshoot electrical circuits and the applications test equipment. Also covers specialized line worker test equipment, including the high-voltage detector, phase rotation tester, megohmmeter, phasing stick, and hi-pot tester. Covers the specialized tools used by line workers, including hot sticks, as well as universal tool accessories. Also covers ladders and work platforms; crimpers; cable cutters; pneumatic tools; and powder-actuated tools.	

Element/Course: Electrical Theory, Circuits, Code and Applied Math - year-1	Planned Hours: 52.5
Mode of Instruction (check all that apply) <input type="checkbox"/> Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Online <input checked="" type="checkbox"/> Self-Study Provided by: Boeing	
Description of element/course: Discusses basic atomic and electrical theory and electrical units of measurement. Explains how Ohm's law and the power equation can be used to determine unknown values and introduces electrical schematic diagrams. Introduces basic circuits, as well as the methods for calculating the electrical energy within them. Covers resistive circuits, Kirchhoff's voltage and current laws, and circuit analysis. Describes how to calculate voltage, current, and resistance values in series, parallel, and combination DC circuits using Ohm's law. Also includes a basic description of grounding and bonding. Introduces the National Electrical code (NEC®) and explains how to use it to find the installation requirements. Provides an overview of the National Electrical Manufacturers Association and Nationally Recognized Testing Laboratories. Explains how to use ratios and proportions, solve basic algebra, area, volume, and circumference problems, and solve for right triangles using the Pythagorean theorem.	

Element/Course: Alternating Current and Three-Phase Systems - year-2	Planned Hours: 55
Mode of Instruction (check all that apply) <input type="checkbox"/> Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Online <input checked="" type="checkbox"/> Self-Study Provided by: Boeing	
Description of element/course: Describes AC circuits and explains how to apply Ohm's law to solve unknown circuit values. Covers transformers, single-phase and three-phase power distribution, capacitors, the theory and operation of induction motors, and the instruments and techniques used in testing AC circuits and components. Introduces the development of both single and three-phase alternating current. Analyzes the relationship of AC phases and introduces key components used to refine AC power. Discusses the operation of transformers and introduces advanced AC concepts such as reactive power and the power factor.	

Element/Course: Electrical Theory 2 - Motors, Ground and Bonding - year-2	Planned Hours: 50
Mode of Instruction (check all that apply) <input type="checkbox"/> Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Online <input checked="" type="checkbox"/> Self-Study Provided by: Boeing	
Description of element/course: Introduces electrical concepts used in Ohm's law as applied to DC series circuits. Includes atomic theory, electromotive force, resistance, and electric power equations. Introduces series, parallel, and series-parallel circuits. Covers resistive circuits, Kirchhoff's voltage and current laws, and circuit analysis. Covers AC and DC motors, including the main components, circuits, and connections. Explains the grounding and bonding requirements of NEC Article 250. Covers how to size the main and system bonding jumpers and the grounding electrode conductor for various AC systems.	

Element/Course: Control Systems, Lighting Concepts and Circuits - year-2	Planned Hours: 47.5
Mode of Instruction (check all that apply) <input type="checkbox"/> Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Online <input checked="" type="checkbox"/> Self-Study Provided by: Boeing	
Description of element/course: Describes the operating principles of contactors and relays, including both mechanical and solid-state devices. Explains how to select and install relays and troubleshoot control circuits. Introduces the principles of human vision and the characteristics of light. Covers different types of light sources and the operating characteristics and installation requirements of various lighting fixtures. Explains how to prepare cable ends for terminations and splices. Describes how to train cable at termination points and describes crimping techniques. Describes the operating principles of circuit breakers and fuses and explains how to select and install overcurrent devices.	

Element/Course: Motor Controls and Load Calculations - 1 - year-3	Planned Hours: 50
Mode of Instruction (check all that apply) <input type="checkbox"/> Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Online <input checked="" type="checkbox"/> Self-Study Provided by: Boeing	
Description of element/course: Explains how to calculate branch circuits and feeder loads for residential and commercial applications. It covers various derating factors. Discusses switchboards and switchgear, including installation, grounding, and maintenance requirements. Covers ground fault relay testing. Describes the construction, operation, and applications of various transformers. Covers transformer connections and grounding requirements. Provides information on selecting, sizing, and installing motor controllers, as well as control circuit pilot devices and basic relay logic.	

Element/Course: Conductor Selection, Switches and Process Control - year-3	Planned Hours: 50
Mode of Instruction (check all that apply) <input type="checkbox"/> Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Online <input checked="" type="checkbox"/> Self-Study Provided by: Boeing	
Description of element/course: Explains how to make conductor calculations. Covers other factors involved in conductor selection, including insulation types, current-carrying capacity, temperature ratings, and voltage drop. Covers the principles of operation and applications of switches and photoelectric devices in the instrumentation environment. Describes the principles of process control and how various types of control loops are applied. Discusses ONOFF and modulating control schemes. Explains how process control principles are applied to flow, level, temperature, and pressure control loops.	

Element/Course: Safety: Hazardous Locations and Overcurrent Protection - year-3	Planned Hours: 55
Mode of Instruction (check all that apply) <input type="checkbox"/> Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Online <input checked="" type="checkbox"/> Self-Study Provided by: Boeing	
Description of element/course: Presents the NEC® requirements for equipment installed in hazardous locations. Explains how to size and select circuit breakers and fuses for various applications. Covers short circuit calculations and troubleshooting. Presents the principles of operation and applications of various relays and timers. Also reviews the selection process for these devices.	

Element/Course: Emergency Systems and Load Calculations 2 - year-4	Planned Hours: 50
Mode of Instruction (check all that apply) <input type="checkbox"/> Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Online <input checked="" type="checkbox"/> Self-Study Provided by: Boeing	
Description of element/course: Covers basic calculations for commercial and residential applications, including raceway fill, conductor derating, and voltage drop. Explains the NEC® installation requirements for electric generators and storage batteries used during such emergency situations. Explains the function and operation of basic electronic devices, including semiconductors, diodes, rectifiers, and transistors. Covers various types of transformers, and provides information on selecting, sizing, and installing them.	

Element/Course: Controls, Heat Tracing and Freeze Protection - year-4	Planned Hours: 45
Mode of Instruction (check all that apply) <input type="checkbox"/> Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Online <input checked="" type="checkbox"/> Self-Study Provided by: Boeing	
Description of element/course: Discusses applications and operating principles of various control system components, such as solid-state relays, reduced-voltage starters, and adjustable-frequency drives. Covers basic troubleshooting procedures. Provides a basic overview of HVAC systems and their controls. Also covers electrical troubleshooting and NEC® requirements. Presents heat-tracing and freeze-protection systems along with various applications and installation.	

Element/Course: Motor Operation, Maintenance and PLC - year-4	Planned Hours: 50
Mode of Instruction (check all that apply) <input type="checkbox"/> Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Online <input checked="" type="checkbox"/> Self-Study Provided by: Boeing	
Description of element/course: Covers motor care procedures, including cleaning, testing, and preventive maintenance. Describes basic troubleshooting procedures. Identifies types of medium-voltage cable and describes how to make various splices and terminations. Covers hi-pot testing. Explains the installation, utilization, and maintenance requirements for standby and emergency electrical systems. Introduces the application of PLCs in industrial process control, as well as the binary numbering system used in computer-based control. Covers components of PLCs, including power supplies, I/O modules, processor modules, types of communication bus, and memory.	

Additional Training Providers (if necessary)

Click or tap here to enter text.

Print Name Training Provider

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Title of Training Provider

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