

For L&I Staff Use Only

Received: L&I Tukwila, 2A
May 31, 2024 *SKH*

Teri Gardner 5-31-24

L&I Apprenticeship Consultant

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: **AJAC - PRODUCTION APPRENTICESHIP COMMITTEE, #1828**

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	05/24/2024		
Print Name: Demetria L. Strickland		Print Name:	
Signature: <i>Demetria L. Strickland</i>		Signature:	

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

Attach additional sheets if necessary

IX. RELATED/SUPPLEMENTAL INSTRUCTION:

C. Additional Information:

5. All apprentices will be provided with a minimum of 144 hours of RSI per year, up to a total of:
 - b. 300 hours of RSI over the course of their apprenticeship for Industrial Machine Operator apprentices.
 - Apprentices will take the four Required Courses and two of the Optional Courses as determined by the industry needs of the employers.

X. ADMINISTRATIVE/DISCIPLINARY PROCEDURES:

A. Administrative Procedures:

3. Sponsor Procedures:

c. Credit for Previous Experience or Early Completion

- 4) There is a maximum credit of 25% for the term of apprenticeship except for apprentices transferring into or starting new occupations where more than 25% equivalency can be demonstrated. ~~In the case of Machinist (Aircraft Oriented) graduates who are applying for the Tool and Die Maker occupation, more than 25% credit may be awarded for OJT hours.~~

d. Credit for Previous Education/Challenge of Curriculum (RSI Only):

- 1) An apprentice who has previous industry-related education may request credit for previous education and/or challenge RSI curriculum. An apprentice request for credit for previous education and/or challenge of RSI curriculum cannot exceed 25% of the total RSI program course except for apprentices transferring into or being registered to new occupations where more than 25% equivalency can be demonstrated. ~~In the case of Machinist (Aircraft oriented) graduates who are applying for the Tool and Die Maker occupation, more than 25% credit may be awarded for RSI hours.~~
- 3) To be considered for credit for previous education, apprentices must have successfully completed post-secondary level class(es) in the related subject ~~within the previous five (5) years~~, have a passing grade of 75% or higher and submit a completed Credit for Previous Experience/Education packet to Program Staff.

B. Disciplinary Procedures:

3. Sponsor Disciplinary Procedures:

- b. **If a hearing by the Apprenticeship Committee is required, apprentice shall be notified via email ~~notification will be sent by certified mail~~ at least twenty (20) days prior to the hearing with notification letter attached ~~and will contain informing the apprentice~~ of the alleged charges, ~~and~~ Standards section(s) violated, and a range of penalties, which may be imposed.**

- e. **Apprentices will be notified in writing of the decision of the Apprenticeship Committee by ~~certified mail~~ email with notification letter attached within ten (10) business days.**

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Apprenticeship Related/Supplemental Instruction (RSI) Plan Review

Program Name AJAC - Production Apprenticeship Committee	
Occupation Industrial Machine Operator	
Term/OJT Hours 3000	Total RSI Hours 300
Training Provider AJAC Advanced Manufacturing Apprenticeships	

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	05/24/2024		
Print Name: Demetria L. Strickland		Print Name:	
Signature: <i>Demetria L. Strickland</i>		Signature:	

Training Provider Signature

Approved By (Print Name): AJAC Advanced Manufacturing Apprenticeships	Title: Training Coordinator
Signature of the Training Provider: <i>Demetria L. Strickland</i>	
Date: 05/24/2024	

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 AJAC - Production Apprenticeship Committee	Occupational Objective Industrial Machine Operator
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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.

REQUIRED COURSES

Element/Course: Industrial Maintenance & Mechatronics I (Year 1)	Planned Hours: 50
Mode of Instruction (check all that apply) <input checked="" type="checkbox"/> 50 Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Online <input type="checkbox"/> Self-Study Online classes, when used, will provide the same theory/content to classroom instruction. Online classes allow AJAC Advanced Manufacturing Apprenticeships to provide instruction to apprentices across the state who are in different locations (east/west or north/south). Provided by: AJAC Advanced Manufacturing Apprenticeships	
Description of element/course: This is the first of two courses that explore the foundational principles and skills of industrial machine maintenance as it relates to a machine operator. Apprentices learn predictive and preventative maintenance and troubleshooting strategies for machine repair. They focus on methodologies such as 5 why and root cause analysis to isolate problems and determine the most effective troubleshooting strategies. Students describe the elements of and physical principles behind mechanical, fluid power, pneumatic systems, electrical systems and how to interpret technical drawings related to these systems. Some of the mechanical systems students learn about include belts and pulleys, chains, and gears, and conveyor systems. Apprentices will also explain the fundamentals aspects of safety related to electrical circuits.	

Element/Course: Industrial Maintenance & Mechatronics II (Year 1)	Planned Hours: 50
Mode of Instruction (check all that apply) <input checked="" type="checkbox"/> 50 Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Online <input type="checkbox"/> Self-Study Online classes, when used, will provide the same theory/content to classroom instruction. Online classes allow AJAC Advanced Manufacturing Apprenticeships to provide instruction to apprentices across the state who are in different locations (east/west or north/south). Provided by: AJAC Advanced Manufacturing Apprenticeships	
Description of element/course: This is the second of two courses that explore the foundational principles and skills of industrial machine maintenance as it relates to the machine operators. Apprentices learn about mechanical rigging and installation, including safety, installation, and ways to perform lifts. They describe elements of electronic control systems, including diodes, transistors, and integrated circuits. They demonstrate knowledge of the main components, programming, and maintenance of Programmable Logic Controllers (PLCs) and Human-Machine Interfaces (HMIs). Finally, apprentices explore concepts related to maintenance repair welding, and learn the fundamentals of sanitary design.	

Element/Course: Material Science (Year 1)	Planned Hours: 50
Mode of Instruction (check all that apply) <input checked="" type="checkbox"/> 50 Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Online <input type="checkbox"/> Self-Study	

Online classes, when used, will provide the same theory/content to classroom instruction. Online classes allow AJAC | Advanced Manufacturing Apprenticeships to provide instruction to apprentices across the state who are in different locations (east/west or north/south).

Provided by: AJAC | Advanced Manufacturing Apprenticeships

Description of element/course:

In this course, apprentices will explore metallurgy, material properties and characteristics, related standards, and processes commonly used to manipulate materials. Apprentices will begin by learning about material composition and characteristics of the five basic metals: steel, stainless steel, cast iron, aluminum, and brass (copper). This course will then explore manufacturing processes used to manipulate metals, such as machining, casting, and forging, as well as processes that change their chemical composition, including heat treatment. The apprentices will also learn about and practice inspection techniques such as hardness testing and non-destructive testing (NDT) techniques with modern equipment. Hands-on projects for this course include materials testing, heat treatment, case hardening, casting, and material sample identification projects. Throughout the course, apprentices will research materials and processes in a shop reference, *Machinery's Handbook*.

Element/Course: Technical Drawings (Year 2)

Planned Hours: 50

Mode of Instruction (check all that apply)

50 Classroom Lab Online Self-Study

Online classes, when used, will provide the same theory/content to classroom instruction. Online classes allow AJAC | Advanced Manufacturing Apprenticeships to provide instruction to apprentices across the state who are in different locations (east/west or north/south).

Provided by: AJAC | Advanced Manufacturing Apprenticeships

Description of element/course:

In this course, apprentices will learn to read and interpret technical drawings, schematics, sheet metal drawings, bills of materials, parts lists as well as practice basic drafting. Apprentices will begin by interpreting the basic elements of a drawing: line types, symbols, 3rd angle projection, principles of orthographic projection, and normal, detail, sectional, and auxiliary views. Apprentices will use authentic industry drawings to learn to interpret dimensioning and tolerancing on prints, GD & T per ASME Y14 Standards, welding symbols, surface finish, ADCNs, and DCNs. Drawings studied in this class will include machining, fabrication, sheet metal, assemblies and fluid power systems. Apprentices will also learn about various types of threads, fasteners, cams, and gears. Hands-on activities in this course include creating various types of shop sketches such as creating an original drawing for a sheet metal product and applying print-reading knowledge to inspect a part.

OPTIONAL COURSES (Must Select Two in Year 2)

Element/Course: Geometric Dimensioning and Tolerancing (GD&T)

Planned Hours: 50

Mode of Instruction (check all that apply)

50 Classroom Lab Online Self-Study

Online classes, when used, will provide the same theory/content to classroom instruction. Online classes allow AJAC | Advanced Manufacturing Apprenticeships to provide instruction to apprentices across the state who are in different locations (east/west or north/south).

Provided by: AJAC | Advanced Manufacturing Apprenticeships

Description of element/course:

This course introduces apprentice machinists to principles of geometric dimensioning and tolerancing ("GD&T") governed by the ASME Y14.5 standard. Apprentices will learn to identify and interpret each of the GD&T controls for form, profile, orientation, location, and runout. Apprentices will learn to interpret symbols, datums, basic dimensions, material condition modifiers, and other GD&T concepts that are essential for the machinist. Hands-on activities will emphasize interpreting GD&T found on engineering drawings, as well as the setup, measuring, and inspection of a part or features with geometric tolerancing.

Element/Course: Electrical Systems

Planned Hours: 50

<p>Mode of Instruction (check all that apply)</p> <p><input checked="" type="checkbox"/> 50 Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Online <input type="checkbox"/> Self-Study</p> <p>Online classes, when used, will provide the same theory/content to classroom instruction. Online classes allow AJAC Advanced Manufacturing Apprenticeships to provide instruction to apprentices across the state who are in different locations (east/west or north/south).</p> <p>Provided by: AJAC Advanced Manufacturing Apprenticeships</p>
<p>Description of element/course:</p> <p>In this course, apprentices will learn about industrial electrical theory, components, and systems necessary to troubleshoot electrical problems. Apprentices will begin by learning to interpret electrical symbols, diagrams, and terminology. They will explore topics such as electric power, circuits, wiring, and transformers. This course will also cover AC theory, DC generators and motors, servo motors, industrial electronics, and an introduction to programmable logic controls (PLCs), as well troubleshooting techniques. Apprentices will gain hands-on experience with simulators and electrical systems used in industry, with an emphasis on troubleshooting and repair.</p>

Element/Course: CNC Setup & Ops	Planned Hours: 50
<p>Mode of Instruction (check all that apply)</p> <p><input checked="" type="checkbox"/> 50 Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Online <input type="checkbox"/> Self-Study</p> <p>Online classes, when used, will provide the same theory/content to classroom instruction. Online classes allow AJAC Advanced Manufacturing Apprenticeships to provide instruction to apprentices across the state who are in different locations (east/west or north/south).</p> <p>Provided by: AJAC Advanced Manufacturing Apprenticeships</p>	
<p>Description of element/course:</p> <p>This course introduces basic CNC machine setup processes used on the mill and the lathe. Topics covered will include reading basic G&M codes, calculating work offsets, building tools, and setting tool offsets. Special emphasis will be on machine awareness and crash prevention.</p>	

Element/Course: LEAN Six Sigma Foundations	Planned Hours: 50
<p>Mode of Instruction (check all that apply)</p> <p><input checked="" type="checkbox"/> 50 Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Online <input type="checkbox"/> Self-Study</p> <p>Online classes, when used, will provide the same theory/content to classroom instruction. Online classes allow AJAC Advanced Manufacturing Apprenticeships to provide instruction to apprentices across the state who are in different locations (east/west or north/south).</p> <p>Provided by: AJAC Advanced Manufacturing Apprenticeships</p>	
<p>Description of element/course:</p> <p>In this course, students will be able to relate LEAN Six Sigma concepts to production objectives. They will identify waste within the value stream and demonstrate the ability to effectively analyze and present data to co-workers and stakeholders. They will define and apply team leadership tools to aid in process improvement. Students will collect and process customer or internal stakeholder input/requirements and identify key metrics for measuring success. Students will define the DMAIC process and effectively use tools and concepts associated with each phase of the DMAIC process. Finally, they'll employ Lean Six Sigma skills in process improvement projects.</p>	

Element/Course: Quality Assurance & Inspection	Planned Hours: 50
<p>Mode of Instruction (check all that apply)</p> <p><input checked="" type="checkbox"/> 50 Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Online <input type="checkbox"/> Self-Study</p> <p>Online classes, when used, will provide the same theory/content to classroom instruction. Online classes allow AJAC Advanced Manufacturing Apprenticeships to provide instruction to apprentices across the state who are in different locations (east/west or north/south).</p> <p>Provided by: AJAC Advanced Manufacturing Apprenticeships</p>	
<p>Description of element/course:</p>	

Delivering quality efficiently is the key to strong manufacturing. To be competitive, today's machinist must be able to effectively inspect parts in the shop with a variety of methods and instruments. This course focuses on the science and skill of measuring and inspection. They will learn to verify dimensions of size and position, surface finish, material hardness, threads, and other important elements. Apprentices will have hands-on practice using a variety of measuring instruments such as micrometers, calipers, precision gages and coordinate measuring machines (CMMs). Apprentices will also learn techniques for inspection planning, first article inspection, in process inspection, and statistical process control. Instructors will reinforce the theory and technique of accuracy, precision and repeatability to help students develop an uncompromising attitude towards good inspection technique.

Additional Training Providers (if necessary)

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Print Name Training Provider

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Title of Training Provider

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