



PROGRAM OF STUDY



Career Cluster: Manufacturing
Repair

Career Cluster Pathway: Maintenance, Installation &

This Career Pathway Program of Study can serve as a guide along with other career planning materials as learners continue on a career path. Courses listed within this program are only recommended coursework and should be individualized to meet each learner's education and career goals. **Note:** Many items have links to external resources with more information.

REQUIRED CREDITS	GRADE	English/ Language Arts (4.0 credits)	Social Studies (2.5 credits)	Math (2.0 credits)*	Science (2.0 credits)	Fine Arts (1.0 credits)	Health/ Fitness (2.5 credits)**	Electives (6.5 credits)	Related Career & Technical/ Occupational (1.0 credits) Certificate and Tech Prep (notation on HS and TP alignment)	SAMPLE Occupations Relating To This Pathway (*indicates job in high demand) (⊙ indicates a "green" job)
SECONDARY SAMPLE COURSE OFFERINGS	9	English 1 or Honors English 1	Pacific Northwest History (.5)	Algebra I Geometry	Integrated Science or Adv Int Science		Health (.5)		ASD CTE COURSE OPTIONS Digital Communications/ Digitools Industrial Engineering Advanced Industrial Engineering Natural Resource I Natural Resource II Wood Technology I Wood Technology II Work Based Learning CTE Grad Project LEADERSHIP SkillsUSA TECH PREP ARTICULATIONS Digital Communications/Digitools – Grays Harbor College Natural Resources I – Grays Harbor College (5cr.) (3cr.) Wood Technology II – Grays Harbor College (5cr.) CERTIFICATIONS Work Readiness Credential Refrigeration Handlers Certification	Little or No Preparation <ul style="list-style-type: none"> Cleaners of Vehicles and Equipment* ⊙ Junior Renewable Energy Technician ⊙ Solar Energy System Installer Helper Some Preparation <ul style="list-style-type: none"> ⊙ Automotive Plant Assembly • Boilermakers ⊙ Carbon Capture Power Plant Installations, and Operations ⊙ Carbon Sequestration Plant Installation, and Operations ⊙ Diesel Retrofit Installer ⊙ Diesel Retrofit Manufacturer Plant Labor • Electrical and Electronic Equipment Assemblers ⊙ Geothermal Plant Installation Technician ⊙ Hydrogen Power Plant Installation, and Operations • Locksmiths and Safe Repairers* • Maintenance Workers, Machinery • Mechanical Door Repairers • Security System Installer ⊙ Shoe and Leather Workers and Repairers ⊙ Solar Energy System Installer ⊙ Solar and PV Installation: Roofer ⊙ Wind Field Technician ⊙ Wind Generating Installer
	10	English 2 or Honors English 2	US History	*Class of 2013 (add't 1.0 credit) or Algebra II or	Biology or AP Biology or Biotechnology or Horticulture or Natural Resources I			Elective courses (6.5) and Project Me and Other CAA requirements		
	11	English Electives or Business English	World History or Economics or Economics II	Pre-Calculus or Calculus or CTE Equivalent		Credits from Art Courses or CTE Equivalent		Credits from Health and Fitness Courses		
	12	English Electives or Business English	World History or Economics or Economics II and CWP	(Students must pass a math competency test or have four years of math credits.)	Science Electives			**Successfully completing two years of physical education and one semester of health is required for high school graduation.		
Y ED UC	Technical Certification <i>(instruction provided through certified training and/or testing centers)</i>			Apprenticeship Opportunities		2-yr or ATA Degree <i>(Find specific colleges at www.checkoutcollege.com)</i>		4 –yr Degree or Advanced Training		Medium Preparation <ul style="list-style-type: none"> • Biomedical Equipment Technician • Communication System

<p><u>Appliance Installation and Repair Technology</u></p> <ul style="list-style-type: none"> • Bellingham Technical College • Renton Technical College <p><u>Communications Systems Installation and Repair Technology</u></p> <ul style="list-style-type: none"> • Bates Technical College • New Horizons Computer Learning Center • Seattle Vocational Institute • Skagit Valley College <p><u>Electrician</u></p> <ul style="list-style-type: none"> • Bates Technical College • Bellingham Technical College • Big Bend Community College • Perry Technical Institute • Spokane Community College <p><u>Heavy/Industrial Equipment Maintenance Technologies</u></p> <ul style="list-style-type: none"> • Big Bend Community College • Skagit Valley College • Lake Washington Technical College <p><u>Industrial Electronics Technology</u></p> <ul style="list-style-type: none"> • Bates Technical College • Renton Technical College • Seattle Community College-North Campus <p><u>Musical Instrument Fabrication and Repair</u></p> <ul style="list-style-type: none"> • Emil Fries Piano Hospital and Training Center • Renton Technical College <p><u>Small Engine Mechanics and Repair Technology/Technician</u></p> <ul style="list-style-type: none"> • Bates Technical College • Spokane Community College 	<p>To learn more about Apprenticeship, visit Labor and Industries website.</p> <p>Follow these steps to learn about the specific apprenticeships available in this pathway:</p> <p>STEP 1: Link to Apprenticeship Registration and Tracking System</p> <p>STEP 2: Search by using key words below or the SOC code listed</p> <ul style="list-style-type: none"> • Appliance Service Technician (49-2092) • Boilermaker (47-2011) • Carpenter (47-2031) • Cellular Manufacturing Mach (51-4041) • Composite Manufacturing (51-9199) • Dock and Wharf Builder (47-2031) • Electronic Mechanic (49-2094) • Facilities Custodial Technician (37-2011) • Gear Machinist (51-4081) • Industrial Controls Tech (51-2022) • Industrial Machinist (51-4041) • Industrial Maintenance Mechanic (47-2111;47-2152; 49-3031; 49-9041; 49-9044; 51-4041; 51-4121) • Industrial Maintenance Welder (51-4121) • Industrial Pipefitter (47-2152) • Industrial Pipefitter/Welder (Maintenance) (47-2152) • Industrial Refrigeration Technician (49-2092; 49-9021) • Industrial Sheet Metal Worker/Welder (Maint) (47-2211) • Industrial Welder Fabricator (51-4121; 47-2152; 47-2211) • Gear Machinist (51-4081) • Industrial Controls Tech (51-2022) • Industrial Machinist (51-4041) 	<p><u>Communications Systems Installation and Repair Technology</u></p> <ul style="list-style-type: none"> • Bates Technical College <p><u>Electrician</u></p> <ul style="list-style-type: none"> • Bates Technical College • Bellingham Technical College • Big Bend Community College <p><u>Electro-Mechanic Tech</u></p> <ul style="list-style-type: none"> • Spokane Community College <p><u>Heavy/Industrial Equipment Maintenance Technologies</u></p> <ul style="list-style-type: none"> • Big Bend Community College <p><u>Industrial Electronics Technology</u></p> <ul style="list-style-type: none"> • Bates Technical College • Renton Technical College • Seattle Community College-North Campus • Wenatchee Valley College <p><u>Industrial Production Technologies</u></p> <ul style="list-style-type: none"> • Olympic College <p><u>Manufacturing Technology</u></p> <ul style="list-style-type: none"> • Bates Technical College • Bellingham Technical College • Clark College • Clover Park Technical College • Everett Community College • Highline Community College • Lower Columbia College • Seattle Community College • Shoreline Community College • Spokane Community College <p><u>Musical Instrument Fabrication and Repair</u></p> <ul style="list-style-type: none"> • Renton Technical College <p><u>Orthotics/Prosthetics</u></p> <ul style="list-style-type: none"> • Spokane Falls Community College <p><u>Small Engine Mechanics and Repair Technology/Technician</u></p> <ul style="list-style-type: none"> • Bates Technical College 	<p><u>Industrial Production Technologies</u></p> <ul style="list-style-type: none"> • Central Washington University • Walla Walla College • Western Washington University <p><u>CTE Secondary Education Teacher</u></p> <ul style="list-style-type: none"> • Education Degree in a CTE program area with 2000 hours of related work experience • Industry Route Certificate requires 6000 hours of work experience in the field and completion of a state approved CTE Preparation Program along with passage of Basic Skills Math and English 	<p>Installer/Repairer</p> <ul style="list-style-type: none"> • Computer Installer/Repairer • Computer Maintenance Technician • Control and Valve Installers and Repairers, Except Mechanical Door • Electric Vehicle Electrician • Electromechanical Equipment Assemblers • Electro-Mechanical Wind Turbine Technician • Electronic Home Entertainment Equipment Installers and Repairers • Geothermal Plant Efficiency Operator • Home Appliance Repairers • Hydro-Electric Operations Maintenance Worker • Hydro-Electric Plant Efficiency Operator • Industrial Engineering Technicians* • Industrial Machinery Mechanics • Instrument Calibration & Repairer • Solar Residential Installation Electrician • Instrument Control Technician • Instrumental, Controls, Electrical Systems Technician • Laser Systems Technician • Medical Equipment Repairers • Meter Installer/Repairer • Musical Instrument Repairer and Tuner • Outdoor Power Equipment and Small Engine Repair • Plumber, Pipe Fitter & Steam Fitter • Radio Mechanics • Solar Commercial Installation Electrician • Solar Commercial Installation Engineering Technician • Solar Residential Installation Electrician Foreman
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- Industrial Maintenance Mechanic (47-2111; 47-2152; 49-3031; 49-9041; 49-9044; 51-4041; 51-4121)
- Industrial Maintenance Welder (51-4121)
- Industrial Pipefitter (47-2152)
- Industrial Pipefitter/Welder (Maintenance) (47-2152)
- Industrial Refrigeration Technician (49-2092; 49-9021)
- Industrial Sheet Metal Worker/Welder (Maint) (47-2211)
- Industrial Welder Fabricator (51-4121; 47-2152; 47-2211)
- Laborer (47-2061)
- Maintenance Electrician (47-2111; 49-2097; 49-9012; 49-9051; 51-2022)
- Maintenance Machinist (51-4041)
- Maintenance Sign Painter (51-9199)
- Maintenance Sign Painter (51-9199)
- Millwright (49-9044)
- Piledriver (47-2031; 47-2072)
- Pipefitter (47-2152)
- Scaffold Erector (47-2031)
- Sheet Metal Worker (47-2211)
- Sign & Pictorial Painter (51-9199)

STEP 3: Click "View" and scroll down to find contact name and program standards for qualifications and how to apply

Considerable Preparation

- ⦿ Biomass Plant Operations, Engineering, and Maintenance
- ⦿ Carbon Capture Power Plant Engineering, and Management
- ⦿ Carbon Sequestration Plant Engineering, and Management
- CTE Teacher
- ⦿ Hydrogen Power Plant Engineering, and Management
- ⦿ Landfill Gas to Energy Installation, Operations, Engineering & Management
- ⦿ Solar Commercial Installation Electrician Foreman
- ⦿ Solar Commercial Installation Engineer
- ⦿ Wind Field Operations Manager for Commercial
- ⦿ Wind Field Service Technician

Extensive Preparation

- ⦿ Geothermal Operations Engineer