



PROGRAM OF STUDY



Career Cluster: Manufacturing

Career Cluster Pathway: Manufacturing Production

Process Development

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 Biotechnology Work Based Learning CTE Grad Project	Some Preparation • Dental Laboratory Technicians ⊙ Geothermal Engineering Intern • Manufacturing Technician • Ophthalmic Laboratory Technicians ⊙ Solar Fabrication Technician ⊙ Wind Turbine Engineering Intern	
	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)	LEADERSHIP SkillsUSA	Medium Preparation ⊙ Battery Manufacturing Technician ⊙ Battery Testing Technician ⊙ Biofuel Plant Field Technician • Civil Engineering Technicians* ⊙ Electric Vehicle Electrician • Electro-Mechanical Technicians • Electro-Mechanical Technicians ⊙ Geothermal Heat Pump Machinist ⊙ Geothermal Sheet Metal Worker ⊙ Hydro-Electric Component Machinist ⊙ Hydro-Electric Construction Sheet Metal Worker	
	11	English Electives or Business English	World History or Economics or Economics II	Pre-Calculus or Calculus or		Credits from Art Courses or CTE Equivalent		Credits from Health and Fitness Courses	Project Me and Other CAA requirements	TECH PREP ARTICULATIONS Digital Communications/Digitools – Grays Harbor College Natural Resources I – Grays Harbor College (5cr.) (3cr.) Wood Technology II – Grays Harbor College (5cr.)	• Mechanical Engineering Technicians* • Medical Appliance Technicians • Numerical Tool and Process Control Programmers Labor Relations Manager • Power Generating and Reactor, Plant Operator • Precision Inspector, Tester and Grader • Process Improvement Technician
	12	English Electives or Business English	World History or Economics or Economics II and CWP		CTE Equivalent (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.		CERTIFICATIONS Work Readiness Credential Refrigeration Handlers Certification	Medium Prep (cont.) • Purchasing Agents, Except Wholesale, Retail, and Farm
Y ED UC	Technical Certification (instruction provided through certified training and/or testing centers)			Apprenticeship Opportunities		2-yr or ATA Degree (Find specific colleges at www.checkoutcollege.com)		4 –yr Degree or Advanced Training			

Dental Laboratory Technology

- Bates Technical College

**Machine Tool Technology/
Machinist**

- Bates Technical College
- Bellingham Technical College
- Green River Community College
- Lower Columbia College
- Perry Technical Institute
- Renton Technical College
- Shoreline Community College
- Spokane Community College

Manufacturing Technology

- Bates Technical College
- Lower Columbia College
- Spokane Community College

Optometric/Ophthalmic Technician

- Pima Medical Institute
- Spokane Community College

To learn more about Apprenticeship, visit [Labor and Industries](#) website.

Follow these steps to learn about the specific apprenticeships available in this pathway:

STEP 1: Link to [Apprenticeship Registration and Tracking System](#)

STEP 2: Search by using key words below or the SOC code listed

- Assembly Machinist (51-2031)
- Electronics Technician (17-3023)
- Engineer Technician (17-3027)
- Estimator (17-2071)
- Industrial Instrument Technician (17-3023)
- Industrial Predictive/Preventive Mechanic (49-9041)
- Jig and Fixture Tool Maker (51-4111)
- Model Maker (51-7031)
- Moldmaker (51-9041)
- Saw & Knife Maker (51-4041)
- Soft Tooler (51-4061)
- Technical Engineer (17-1022)
- Tool and Cutter Grinder (51-4194)
- Tool and Die Maker (51-4111)

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

Civil Engineering Technology

- Bates Technical College
- Bellingham Technical College
- Big Bend Community College
- Centralia College
- Renton Technical College
- Shoreline Community College
- Spokane Community College
- Walla Walla College
- Walla Walla Community College
- Yakima Valley Community College

Construction Engineer/Tech

- Clark College
- Edmonds Community College
- Lower Columbia College
- Spokane Community College

Data Processing and Data Processing Technology/Technician

- South Puget Sound Community College and various other technical and community colleges

Dental Laboratory Technology

- Bates Technical College

Electro-Mechanic Tech

- Spokane Community College

Industrial Production Technologies

- Olympic College

**Machine Tool Technology/
Machinist**

- Bates Technical College
- Bellingham Technical College
- Clark College
- Clover Park Technical College
- Columbia Basin College
- Green River Community College
- Lake Washington Technical College
- Lower Columbia College
- Shoreline Community College
- Spokane Community College
- Walla Walla Community College

Construction Engineering Tech

- Central Washington University
- Washington State University

Engineering/Industrial Management

Washington State University

Industrial Production Technologies

- Central Washington University
- Walla Walla College
- Western Washington University

Mechanical Engineering

- Central Washington University
- Eastern Washington University
- Henry Cogswell College
- Walla Walla College

Manufacturing Technology

- Western Washington University

Orthotics/Prosthetics

- University of Washington

CTE Secondary Education Teacher

- 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

Products

- Solar Hot Water Heater
- Solar Lab Technician
- Wind Turbine Machinist
- Wind Turbine Sheet Metal Worker

Considerable Preparation

- Automotive Power Electronics Engineer
- Battery Design Engineer
- Biodiesel/Biofuel Technology & Product Development Manager
- CTE Teacher
- Design Engineer
- Electronics Engineer
- Geothermal Electrical Engineer
- Hybrid Powertrain Development Engineer
- Industrial Engineer
- Landfill Gas to Energy Installation, Operations, Engineering & Management
- Manufacturing Engineer
- Powertrain Control Systems & Software Engineer
- Wind Farm Electrical Systems Designer
- Wind Turbine Electrical Engineer
- Wind Turbine Mechanical Engineer

Extensive Preparation

- Diesel Retrofit Designer

Technical Certification <i>(instruction provided through certified training and/or testing centers)</i>	Apprenticeship Opportunities	2-yr ATA or Degree <i>(Find specific colleges at www.sbctc.ctc.edu – click colleges)</i>	4 –yr Degree or Advanced Training
		<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>Optometric/Ophthalmic Technician</u></p> <ul style="list-style-type: none"> • Spokane Community College <p><u>Orthotics/Prosthetics</u></p> <p>Spokane Falls Community College</p>	

*Data acquired from www.workforceexplorer.com, www.sbctc.edu, www.careerclusters.org, and www.edf.org/cagreenjobs,
 Adapted from <http://www.nthurston.k12.wa.us/education/components/scrapbook/default.php?sectiondetailid=34988>