Key
High School Academic
High School Career & Technical
PCC Dual Credit Articulated Courses
1-year Certificate or 2-year Certificate
AAS Degree
University

Benson High School

Manufacturing Pathway

This program of study should serve as a guide, along with other care

career path. Courses listed within this plan are only recommended coursework an

meet each learner's educational and career goals.

Education Levels	Grade	English / Language Arts	Math	Science	Social Studies / Sciences	Other Required Courses Electives Recommended Electives Learner Activities
SECONDARY	9	English 1-2	Tech Geometry	Biology 1-2	Modern World History 9	Fit to Live and Learn
	10	English 3-4	Tech Algebra	Foundations of Physics & Chemistry	World History 10	Health & Fitness
	11	English 5-6	Pre-Calculus	Chemistry	US History	Second Language
	12	English 7-8	AP Calculus	Physics	Government & Economics	Second Language

PORTLAND COMMUNITY COLLEGE	TERM	PROGRAM OF STUDY				
	FIRST TERM	MCH 100 Machine Tool Basics	MCH 105 Blueprint Reading I	MCH 135 Basic Measuring Tools	MCH 120 Machine Shop Math	MCH 121 Manufacturing Processing I
	SECOND TERM	MCH 125 Speeds and Feeds	MCH 130 Machine Shop Trigonometry	MCH 145 Layout Tools	MCH 150 Precision Measuring Tools	MCH 268 CNC Program - Mill
	THIRD TERM	MCH 205 Vertical Milling Machines and Operations	MCH 272 Mastercam Level I	MSD 115 Improving Work Relations	MCH 160 Drilling Machines and Operations	MCH 180 Turning Machines and Operations
	FOURTH TERM	MCH 278 CNC Operation - Mill	MCH 280 Coperative Education: Machine Technology	MCH 288A Technical Skill Assessment in CNC Milling		

	TERM	PROGRAM OF STUDY				
PORTLAND COMMUNITY COLLEGE	**FIRST TERM**	MCH 100 Machine Tool Basics	MCH 105 Blueprint Reading I	MCH 135 Basic Measuring Tools	MCH 115 Geometric Dimensioning & Tolerance	GENERAL EDUCATION
	SECOND TERM	GENERAL EDUCATION	MCH 110 Blue Print Reading II	MCH 150 Percision Measuring Tools	MCH 160 Drilling Machines and Operations	MCH 190 Boring and Lathe
	THIRD TERM	MCH 125 Speeds and Feeds	MCH 130 Machine Shop Trigonometry	MCH 175 Band Saws	MCH 180 Turning Machines and Operations	MCH 195 Threading on the Lathe
	FOURTH TERM	GENERAL EDUCATION	MCH DEGREE ELECTIVES	MCH 121 Manufacturing Process I	MCH 205 Vertical Milling Machines and Operations	MCH 225 Surface Grinding Machines and Operations
	FIFTH TERM	MCH 259 CNC Programming - Lathe	MCH 268 CNC Programming - Mill	MCH 272 Matercam Level I	MCH DEGREE ELECTIVES	
	SIXTH TERM	MCH 278 CNC Operation Mill	MCH DEGREE ELECTIVES	MCH 273 Mastercam Level II	MCH 279 CNC Operation - Lathe	
	SEVENTH TERM	MCH 280 Cooperative Education: Machine Technology	MCH 287A Technical Skill Assessment in CNC Turning	MCH 288A Technical Skill Assessment in CNC Milling	MCH DEGREE ELECTIVES	MSD 115 Improving Work Relations
UNIVERSITY						

eer planning materials, as you continue your

s plan are only recommended coursework and should be individualized coursework to

*Career and Technical Courses and/or Degree Major Courses	*Career and Technical Courses and/or Degree Elective Courses	
Manufacturing 1	Drafting 1	DIPLOMA
Manufacturing 2	Drafting 2	
Manufacturing 3		
Manufacturing 4		

	Certificates/Degrees/Occupations
MCH 115 Geometric Dimensioning and Tolerancing	**1 year Certificate - CNC Milling** **One Year Certificate**
MCH 110 Blue Print Reading II	
	TOTAL CREDITS 48.5 Machine operators use computer-aided manufacturing (CAM) software to control, manipulate and manage precision tool production. Machine manufacturing and tool dies have become increasingly valuable, especially in the production of high-precision tools for high-tech manufacturing and large industrial construction. With such dramatic advancements over time, it pays to have a solid foundation in the art and mathematical science of

	Certificates/Degrees/Occupations
MCH 120 Machine Shop Math	**Associate of Applied Science Degree Machine Manufacturing Techonology**
GENERAL EDUCATION	Minimum 106 credits. Students must also meet Associate Degree Comprehensive Requirements and Associate of Applied Science Requirements. Students must complete a total of sixteen credits of General Education. Math/computation competency is met through the courses in the program of study indicated with a **§** symbol. A maximum of 24 credits of Pass/No Pass and a maximum of 24 credits of cooperative education (MCH 280) are allowed in the Machine Manufacturing Technology AAS Degree.
GENERAL EDUCATION	

PORTLAND COMMUNITY COLLEGE

TERM	PROGRAM OF STUDY					Certificates/Degrees/Occupations
FIRST TERM	WLD 111 Shielded Metal Arc Welding and Oxy-acetylene Cutting	WLD 112 Shielded Metal Arc Welding: Mild Steel I	WLD 113 Shielded Metal Arc Welding: Mild Steel II	WLD 101 Welding Processes and Applications		**1-year Certificate: Welding**
SECOND TERM	WLD 114 Shielded Metal Arc Welding: Mild Steel III (E6011)	WLD 151 SMAW Certification Practice: Unlimited Thickness Mild Steel	WLD 131 Gas Metal Arc Welding	WLD 132 Gas Metal Arc Welding - Pulse	WLD 102 Blue Print Reading	**Note:** While all courses to the left are required to complete the certificate, course offerings will vary for each campus. See a marketing faculty advisor for assistance in planning a schedule
THIRD TERM	WLD 141 Flux-Cored Arc Welding I (Gas Shielded)	WLD 142 Flux-Cored Arc Welding II (Self Shielding)	WLD 152 Wire Welding Certification Practice	*An additional 4 credits of WLD required for certificate		

PORTLAND COMMUNITY COLLEGE

TERM	PROGRAM OF STUDY					Certificates/Degrees/Occupations
FIRST TERM	WLD 111 Shielded Metal Arc Welding and Oxy-acetylene Cutting	WLD 112 Shielded Metal Arc Welding: Mild Steel I (E7018)	WLD 113 Shielded Metal Arc Welding: Mild Steel II (E7018)	WLD 101 Welding Processes and Applications	General Ed	**Associate of Applied Science Welding CIPS# 480508**
SECOND TERM	WLD 114 Shielded Metal Arc Welding: Mild Steel III (E6011)	WLD 151 SMAW Certification Practice: Unlimited Thickness Mild Steel	WLD 131 Gas Metal Arc Welding	WLD 132 Gas Metal Arc Welding - Pulse	WLD 102 Blue Print Reading	
THIRD TERM	WLD 141 Flux-Cored Arc Welding I (Gas Shielded)	WLD 142 Flux-Cored Arc Welding II (Self Shielding)	WLD 152 Wire Welding Certification Practice	*An additional 4 credits of WLD required for certificate		
FOURTH TERM	WLD 221 Gas Tungsten Arc Welding: Mild Steel	WLD 222 Gas Tungsten Arc Welding: Aluminum	WLD 223 Gas Tungsten Arc Welding: Stainless Steel	WLD 203 Structural Steel Welding Codes & Standards	General Ed	**Degree requirements:** 97 credits. Broken down to include 81 credits of Welding plus 16 credits of general education classes (Arts & Humanities, Social Science, Mathematics, Natural & Physical
FIFTH TERM	WLD 261 Basic Fabrication I	Elective	Elective	General Ed		
	WLD 262		WLD 271			

	SIXTH TERM	WED 262 Basic Fabrication II	Elective	Oxy-acetylene Welding Projects	General Ed		Science and Computer Studies).