

**COURSE OUTLINE****Course:** 72213 MANUFACTURING TECHNICIAN**Total Course Hours:** 720.00**CBEDS Title:** MANUFACTURING/MATERIALS PROCESSING**CBEDS #:** 5601**Job Title(s):**

Set-up machinist, operator, machinist, assemblers, quality control, lead worker, planners, test technicians, programmer.

**Prerequisites:****Course Description:**

This course prepares students for employment or advanced training in the area of Machine Shop Operator using appropriate current machine tools. Students will be introduced to metal working tool identification and terminology, machine tool set-up and operation, planning and layout processes, material selection and application, applied machine tool operations, inspection and quality control and automated manufacturing process. Integrated throughout the course are Academic and CTE standards, which include safety, communication, technology, ethics, career planning and other employability skills.

Hours	
Class	OJT

**Occupational Competencies**

1-7 on the Course Outline are generic to all BVROP courses and include the BVROP Student Outcomes

3.00	3.00	<b>1</b>	<b><u>ORIENTATION</u></b>	<ul style="list-style-type: none"> <li>A Identifies and discusses course objectives and competencies.</li> <li>B Discusses ROP Student Outcomes.</li> <li>C Explains class attendance and behavior objectives.</li> </ul>
3.00	3.00	<b>2</b>	<b><u>HEALTH, SAFETY AND ENVIRONMENTAL MANAGEMENT</u></b>	<ul style="list-style-type: none"> <li>A Describes accident procedure.</li> <li>B Demonstrates appropriate safety practices (e.g. bending, lifting, etc.).</li> <li>C Demonstrates knowledge of classroom procedures and drills (e.g. earthquake, fire and emergency).</li> </ul>
3.00	3.00	<b>3</b>	<b><u>ETHICS AND LEGAL RESPONSIBILITIES</u></b>	<ul style="list-style-type: none"> <li>A Defines sexual harassment and discusses tactics for handling harassment situations.</li> <li>B Applies appropriate workplace behavior and standards.</li> </ul>
3.00	3.00	<b>4</b>	<b><u>LEADERSHIP AND TEAMWORK</u></b>	<ul style="list-style-type: none"> <li>A Describes the characteristics and benefits of teamwork and leadership.</li> <li>B Demonstrates ability to make appropriate decisions.</li> <li>C Works well with others and gives/takes constructive criticism.</li> </ul>
15.00		<b>5</b>	<b><u>CAREER PLANNING</u></b>	<ul style="list-style-type: none"> <li>A Prepares a finished, professional portfolio showing the best work that has been completed during the class.</li> <li>B Locates job opportunities through the use of want-ads and placement agencies.</li> <li>C Visits at least one facility related to area of training and observes jobs performed.</li> <li>D Completes a job application correctly.</li> <li>E Prepares for and critiques a simulated employment interview.</li> <li>F Discusses employee benefits and rights as related to the specific occupational job area including gender equity and equal opportunity.</li> <li>G Identifies acceptable procedures to leave a job.</li> <li>H Applies for a scholarship.</li> <li>I Completes a professional resume.</li> <li>J Demonstrates appropriate personal grooming and dress.</li> </ul>

Hours	
Class	OJT

3.00	3.00	<p><b>6 <u>COMMUNICATION</u></b></p> <p><b>A</b> Uses effective workplace conversation.</p> <p><b>B</b> Reads and interprets written information and directions.</p> <p><b>C</b> Practices various forms of written communication appropriate to the occupation.</p>
5.00	5.00	<p><b>7 <u>STUDENT OUTCOMES</u></b></p> <p><b>A</b> Demonstrates Occupational Specific, Communication and Critical Thinking Skills</p> <p><b>B</b> Demonstrates Responsible Work Ethics</p> <p><b>C</b> Demonstrates Career/Employment Literacy</p> <p><b>D</b> Demonstrates Effective Use of Technology</p>
100.00	10.00	<p><b>8 <u>METALWORKING MACHINE TOOL IDENTIFICATION AND TERMINOLOGY</u></b></p> <p><b>A</b> Demonstrates safe and proper care for hand tools</p> <p><b>B</b> Demonstrates safe and proper care for machine tools</p> <p><b>C</b> Identifies the different styles and materials used in Lathe and Mill cutting tool bits</p> <p><b>D</b> Demonstrates the ability to sharpen metalworking Lathe and Drill tool bits</p>
100.00	10.00	<p><b>9 <u>MACHINE TOOL SET-UP AND OPERATION</u></b></p> <p><b>A</b> Demonstrates the ability to set-up and operate: horizontal band saw, abrasive cut-off saw</p> <p><b>B</b> Demonstrates the ability to set-up and operate: 3-jaw universal lathe chuck, and metal working lathe (gear-driven)</p> <p><b>C</b> Demonstrates the ability to set-up and operate: drill press and milling machine vises and vertical milling machine.</p> <p><b>D</b> Demonstrates the ability to set-up and operate: drill press, disc sander, tool grinder, surface grinder and buffing wheel</p>
50.00	10.00	<p><b>10 <u>PLANNING AND LAYOUT PROCESSES</u></b></p> <p><b>A</b> Demonstrates the proper application and use of measuring devices</p> <p><b>B</b> Demonstrates understanding of project prints and their symbols</p> <p><b>C</b> Demonstrates layout projects from prints</p> <p><b>D</b> Understands machining print tolerances and their applications</p> <p><b>E</b> Identifies and lists the machining operations for completing a project</p> <p><b>F</b> Demonstrates knowledge and understanding of jigs, fixtures, and sub-assemblies</p>
75.00	10.00	<p><b>11 <u>MATERIAL SELECTION AND APPLICATION</u></b></p> <p><b>A</b> Identifies manufacturing materials and demonstrates knowledge of their characteristics</p>
100.00	10.00	<p><b>12 <u>APPLIED MACHINE TOOL OPERATIONS</u></b></p> <p><b>A</b> Demonstrates drill and tap in steel and aluminum (flat and round stock)</p> <p><b>B</b> Demonstrates understanding, application, and operation of the metal working lathe</p> <p><b>C</b> Demonstrates understanding, application and operation of the vertical and horizontal milling machine</p> <p><b>D</b> Identifies types and applications of different metal working lathe tool holders and cutting tools</p> <p><b>E</b> Identifies types and applications of different vertical milling machine cutters and tool holders</p> <p><b>F</b> Identifies types and applications of different finishing abrasives</p> <p><b>G</b> Demonstrates the ability to finish grind, sand, and polish to appropriate standards</p>
70.00	10.00	<p><b>13 <u>INSPECTION AND QUALITY CONTROL</u></b></p> <p><b>A</b> Demonstrates understanding and use of measuring equipment with outside and inside calipers</p> <p><b>B</b> Demonstrates understanding and use of measuring equipment with outside micrometer</p> <p><b>C</b> Demonstrates understanding and use of measuring equipment with dial-vernier caliper</p> <p><b>D</b> Demonstrates surface plates/height gauge.</p>

Hours	
Class	OJT

100.00	10.00	<b>14 <u>AUTOMATED MANUFACTURING PROCESS</u></b>
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- A** Identifies Computer-Numerical-Control (CNC) machine tools and their terminology
- B** Demonstrates knowledge and application of simple CNC machining codes
- C** Demonstrates the ability to manually diagram CNC coordinate systems
- D** Demonstrates the ability to set-up and indicate material on: CNC Turning Center and CNC Machining Center
- E** Demonstrates basic understanding of CAD/CAM Systems. Geometric tolerance is included in 10 & 13 but needs to be emphasized.

**TOTAL HOURS**

Class	OJT	Course
<b>630.00</b>	<b>90.00</b>	<b>720.00</b>