

# Work Processes Schedule

## MACHINIST

**RAPIDS: 0296N**

O\*NET/SOC: 51-4041.00

REVISION DATE: 12/2014

Repair and operate auxiliary machinery. Calculate time and material for shop work and repair of auxiliary machinery. Draw sketches and prepare specifications for replacement parts. Use sketches and specifications to produce replacement parts. Operate shop equipment, such as lathes, drill presses, shapers, bench grinders, milling machines, boring mills, power hacksaws and computer numerically controlled machinery. Work with precision measuring instruments such as micrometers, depth gauges, verniers, calipers, gauge blocks, protractors and dial indicators. Engrave metal and other materials; perform electroplating and flame spraying operations.

### Applicable Ratings/MOS

USMC MOS 2112, 2161

USCG None

USN MR

### Related Instruction

Any trade related schools/courses totaling 576 hours.

### Additional Requirement

None

Total Hours: **8000**

Skill	Description	Hours
<b>A</b>	<p><b>FUNDAMENTALS</b></p> <p>Demonstration of knowledge required in all areas;</p> <ol style="list-style-type: none"> <li>1. Safety Precautions Fundamentals</li> <li>2. First Aid and Rescue</li> <li>3. Quality Assurance Administration Fundamentals</li> <li>4. Quality Assurance Program Fundamentals</li> <li>5. Levels Of Control Fundamentals</li> <li>6. Hearing Conservation Program Fundamentals</li> <li>7. Hazardous Material Control and Management-(HMC&amp;M) Program Fundamentals</li> <li>8. Respiratory Protection Program Fundamentals</li> <li>9. Sight Conservation Program Fundamentals</li> <li>10. General Administration (Log, Record and File Maintenance)</li> <li>11. Technical Administration (Publications and Technical Manuals)</li> <li>12. Logistics</li> <li>13. Shop Fundamentals               <ul style="list-style-type: none"> <li>· Lathe Tool Cutters &amp; Applications · Milling Cutters &amp; Applications ·</li> </ul> </li> </ol> <p>Measuring Instruments ·            Blueprint Reading · Machinery Handbook · H-28 Federal Standards for Thread</p>	500
<b>B</b>	<p><b>EQUIPMENT</b></p> <p>Demonstrate safe operation and upkeep of shop equipment. The Equipment list is representative of tools and machinery typically found in the Work-Center associated with this trade.</p> <ol style="list-style-type: none"> <li>1. Boring, Milling &amp; Drilling Machine (Versa-Mill)</li> <li>2. Boring Machine, Vertical (Jig-Bore)</li> <li>3. Metallizing Gun, Powder Feeder, Portable</li> <li>4. Cut-Off Machine, Abrasive</li> <li>5. Cutting Machine, Commutator/Slip-Ring, Portable</li> <li>6. Drill Press w/Tilting Table</li> <li>7. Disintegrator, Metal, Portable</li> <li>8. Electroplating Machine</li> <li>9. Grinding Machine</li> <li>10. Grinder, Cylindrical, Universal</li> <li>11. Grinding Machine, Universal Tool &amp; Cutter</li> <li>12. Drill Bit Bench Grinder</li> <li>13. Grinder, Carbide Tool and Ship Breaker</li> <li>14. Surface Grinder</li> <li>15. Drill Point Grinder</li> <li>16. Honing Machine, Pedestal</li> </ol>	500

	<ul style="list-style-type: none"> <li>17. Lathe, Engine</li> <li>18. Lathe, Vertical Turrent</li> <li>19. Lathe, Engine, CNC</li> <li>20. Horizontal Milling Machine</li> <li>21. Vertical, CNC Milling Machine</li> <li>22. Portable Milling Machine</li> <li>23. Hydraulic Press, Manual</li> <li>24. Horizontal Band Saw</li> <li>25. Hardness Tester</li> <li>26. Carbide Inserts/Cutters</li> <li>27. Shapers</li> <li>28. Planers</li> </ul>	
<b>C</b>	<p><b>PUMP REPAIR / MANUFACTURE OF INTERNAL COMPONENTS</b></p> <ul style="list-style-type: none"> <li>1. Manufacture and Install Pump Wearing Rings</li> <li>2. Manufacture / Repair Pump Shaft</li> <li>3. Manufacture Shaft Sleeve</li> <li>4. In-Line Bore Split Casing Pump</li> <li>5. Manufacture Centrifugal Pump From Cast</li> <li>6. Resleeve Motor "Endbell" Housings</li> <li>7. Manufacture Flanged Couplings (Straight/Tapered)</li> <li>8. Manufacture Mechanical Seal Stationary Housing</li> </ul>	1500
<b>D</b>	<p><b>VALVE REPAIR / MANUFACTURE OF INTERNAL COMPONENTS</b></p> <ul style="list-style-type: none"> <li>1. Valve Seat Repair</li> <li>2. Duplex Strainer</li> <li>3. Stellite Repair Valve Seating Surfaces</li> <li>4. Flange Layout / Phonogroove</li> <li>5. Leslie Top Cap Assembly</li> <li>6. Manufacture Steam Valve Seal Rings (Silver Seals)</li> <li>7. Manufacture Valve Stems</li> <li>8. Manufacture Straight / Step Backing Rings</li> </ul>	1500
<b>E</b>	<p><b>GEAR MANUFACTURING</b></p> <ul style="list-style-type: none"> <li>1. Manufacture Spur Gear</li> <li>2. Manufacture Bevel Gear</li> <li>3. Manufacture Worm Gear / Worm Wheel</li> <li>4. Manufacture Helical Gear</li> <li>5. Manufacture Stub Tooth Gears</li> <li>6. Manufacture External Splines</li> </ul>	500
<b>F</b>	<p><b>PORTABLE MACHINING OPERATIONS</b></p> <ul style="list-style-type: none"> <li>1. Portable Disintegrator Operations</li> <li>2. Portable Flange Cutting Operations</li> <li>3. Portable Slip Ring Cutting Operations</li> <li>4. Portable Valve Grinding Operations</li> <li>5. Portable Boring Bar Operations</li> <li>6. Portable Versa-Mill Operations</li> </ul>	800
<b>G</b>	<p><b>SPECIALIZED MACHINIST OPERATIONS</b></p> <ul style="list-style-type: none"> <li>1. Heat Treatment Of Metals <ul style="list-style-type: none"> <li>· Hardening Of Ferrous Metals · Temper Hardened Steel · Anneal Ferrous Metals · Normalize Ferrous Metals · Case Hardening Process · Heat Treatment of Non-Ferrous Metals · Demagnetize Metals</li> </ul> </li> <li>2. Metal Buildup - Contact Electroplating <ul style="list-style-type: none"> <li>· Perform Class 1 (Corrosion-Resistant) Coatings · Perform Class 2 (Static Contact) Coatings · Perform Class 3 (Sliding Contact Surfaces) Coatings · Perform Class 3A Coating</li> </ul> </li> <li>3. Metal Buildup - Thermal Spray Application <ul style="list-style-type: none"> <li>· Repair Static Fit Areas (Flanges) · Valve/Pump Mating Surfaces · Repair of Seal (Including Packing Areas) · Repair Fit Areas on Shafts to Restore Original Dimensions · Buildup of Pump Shaft Sleeves and Wear Rings · Repair of Bearing Shaft Journals to Restore Original Dimensions · Babbitt Bearings for Auxiliary Equipment</li> </ul> </li> <li>4. Off-Hand / Tool And Cutter Grinding <ul style="list-style-type: none"> <li>· Off-Hand Grind High Speed Steel Tool Cutters · Sharpen Carbide Tooling</li> </ul> </li> </ul>	2700

Cutters/Inserts · Sharpen

Multi-Flute Cutters · Sharpen Drill Bits · Manufacture / Grind Shims and Spacers

5. Automated Production / CNC Operations

· Develop CNC Operating Part Programs Utilizing CAD/CAM Systems · Develop Written Procedures For

Manual Input Programming · Program CNC Machines · Setup CNC Machine

6. Miscellaneous Functions

· Recondition Babbitt Bearings · Metal Identification · Rapid Metal Identification · Engraving/Pantograph Operations