



Job Titles

Education and Training

Industry Recognized Credentials

Average Wages

Job Titles	Education and Training	Industry Recognized Credentials	Average Wages
<p>Production Manager (O*Net: 11-3051)</p>	<p>On-the-job</p> <p>Four-Year Degree*</p>	<p>SME Credential: CmfGE</p>	<p>\$25.00 per hour and up</p>
<p>Jig & Fixture Design / Mold Maker (O*Net: 51-4071)</p> <p>Toolmaker (O*Net: 51-4111)</p> <p>Team Lead / Supervisor (O*Net: 51-1011)</p> <p>CNC Programmer (O*Net: 5-4012)</p> <p>CNC Machinist (O*Net: 5-4012)</p>	<p>Associates Degree (Focus on Tool Making; CAD/CAM; CNC Programming, Pre-Engineering etc.) + Internship/Co-op or extensive work experience</p>	<p>Vendor Specific Credential, such as SoftWorks, Fanuc, etc., or SME Credential: CmfGT</p>	<p>\$23-35.00 per hour</p>
<p>Machining Level 3 / Set-up Tech (O*Net: 51-4041)</p>	<p>Registered Apprenticeship</p>	<p>3 NIMS Level 2 Certificates</p>	<p>\$15-30.00 per hour (increases with years on the job)</p>
<p>Machining Level 2 (O*Net: 51-4041)</p>	<p>Adult CTE certificate (1-year) or community college certificate</p>	<p>3-4 Additional NIMS Level 1 Certificates</p>	<p>\$15-22.00 per hour (increases with years on the job)</p>
<p>Machining Level 1 (O*Net: 51-4041)</p>	<p>Some technical training (e.g., 6 month pre-apprenticeship)</p>	<p>1-2 NIMS Level 1 Certificates</p>	<p>\$12-17.00 per hour</p>
<p>Production Machining (O*Net: 51-4081)</p>	<p>HS Diploma, GED, some technical training</p>	<p>MSSC CPT, NCRC, OSHA 10</p>	<p>\$10.00-13.00 per hour</p>

*Credits from Career and Technical Center and Community College Programs may not articulate into BS degrees at 4-year universities.

*CTE: Career and Technical Education

ERMP Machining Career Pathway

All levels: Foundational employability skills, basic math and computer skills, written and verbal communication skills; safety awareness

■ Production Machining Competencies and Credentials:

- Operate machines, such as lathes, cutters, shears, borers, millers, grinders, presses, drills, and auxiliary machines
- Blueprint reading
- Part inspection
- **Manufacturing Skill Standards Council (MSSC) Certified Production Technician; WorkKeys National Career Readiness Certificate (NCRC); OSHA 10**

■ Machining Level 1 Competencies and Credentials:

- All competencies included in Production Machining, plus:
- Shop Math
- Identify and Demonstrate Use of Machine Safety and PPE
- Demonstrate Compliance with Lock-out/Tag-out Procedures
- Machine Operations and Material Handling, hazardous Materials Handling and Storage
- Process Control and Process Adjustment – Single Part Production
- Participation in Processes Improvement
- Sawing
- Job Process Planning
- **NIMS Benchwork and Layout;¹ NIMS Measurement, Materials, and Safety; NIMS CNC: Operate a CNC Milling Machine and/or Operate a CNC Lathe**

■ Machining Level 2 Competencies and Credentials:

- All competencies included in Machining Level 1, plus:
- Basic machine set-up and change-over
- Exposure to EDM
- CNC: ability to change offsets, do simple programming tasks
- **NIMS Drilling Operations; NIMS Turning Operations: Turning Between Centers; NIMS Turning Operations: Chucking; NIMS Milling: Square Up a Block; NIMS Manual Milling: Vertical and Horizontal**

■ Machining Level 3 Competencies and Credentials

- All competencies included in Machining Level 2, plus:
- Complete, complex set-up or change-over
- Preventive Maintenance
- Machine Tooling
- **NIMS Turning Between Centers Level 2; NIMS Chucking Level 2; NIMS Milling Level 2**

■ Specialized Tracks Competencies and Credentials

- All competencies included in Machining Level 3, plus specialization in:
- Manage/coordinate projects
- Plan and design job
- Plan Job and Set-up Work Station; set up equipment, machine components, and details
- Assemble Tools & Die
- Troubleshoot Tool and Die Problems
- **NIMS Write a Simple CNC Milling Program and Review Tool Path; NIMS Write a Simple CNC Turning Program and Review Tool Path; NIMS CNC Programming – Milling; NIMS CNC Programming – Turning; NIMS EDM Plunge and EDM 2 Axis Wire; NIMS Die Making (2 Levels); NIMS Mold making and Die Cast/Die Making (2 Levels)**
- **Vendor specific credentials such as SoftWorks or Fanuc (as needed)**
- **Society of Manufacturing Engineers (SME) Certified Manufacturing Technician (CMfgT)**

■ Management & Engineering Competencies and Credentials

- All competencies associated with other levels of the pathway, plus:
- **Society of Manufacturing Engineers (SME) Certified Manufacturing Engineer (CMfgE)**
- Knowledge of math, physics, statistics, etc.
- Product/Process Design; Quality Control/Assurance
- Automated Systems and Control
- Management

¹ All bolded items indicate industry recognized credentials such as those from the National Institute of Metalworking Skills (NIMS) or Society of Manufacturing Engineers (SME).