



NEVADA LABOR COMMISSIONER
NEVADA STATE APPRENTICESHIP COUNCIL
2023 Non-Joint Standards of Apprenticeship

Appendix A11

WORK PROCESS SCHEDULES AND RELATED INSTRUCTION OUTLINE

*Truckee Meadows Community College
and Workforce Connections*

CNC Programmer – Milling and Turning

O*NET-SOC CODE: 51-4012.00 RAPIDS CODE: 1100CB

APPROVED BY
THE NEVADA LABOR COMMISSIONER AND THE NEVADA STATE APPRENTICESHIP COUNCIL

Toni Giddens, Nevada State Apprenticeship Director

REGISTRATION DATE: _____

RAPIDS PROGRAM ID NUMBER: 2018-NV-70687

DEVELOPED IN COOPERATION WITH THE
THE NEVADA LABOR COMMISSIONER, THE NEVADA STATE APPRENTICESHIP COUNCIL AND
THE U.S. DEPARTMENT OF LABOR

Appendix A11

WORK PROCESS SCHEDULE
CNC PROGRAMMER – MILLING AND TURNING
O*NET-SOC CODE: 51-4012.00 RAPIDS CODE: 1100CB

This schedule is attached to and a part of these Standards for the above identified occupation.

1. TYPE OF OCCUPATION

☐ Time-based ☒ Competency-based ☐ Hybrid

2. TERM OF APPRENTICESHIP

The term of the occupation shall be defined by the attainment of all competencies of the position. This would be expected to occur within approximately 3,500-4,000 hours of OJL, supplemented by the minimum of 144 hours of related instruction per year of the apprenticeship.

3. RATIO OF APPRENTICES TO JOURNEYWORKERS

The apprentice to journey worker/fully trained worker ratio is: 1 apprentice to 1 journey worker/fully trained worker.

4. APPRENTICE WAGE SCHEDULE

An apprentice minimum starting wage will be at least \$15.00 per hour. Apprentices shall be paid a progressively increasing schedule of wages based on either a percentage or a dollar amount of the current hourly journey worker/fully trained worker wage. A journey worker/fully trained worker minimum wage will be at least \$25.00.

1-Year Term Example:

1st 6 months = 65% 2nd 6 months = 75%

Periodic review and evaluation of the apprentice's on-the-job learning and related technical instruction will be conducted in alignment with the wage schedule established.

5. WORK PROCESS SCHEDULE (See attached Work Process Schedule)

The sponsor may modify the work processes to meet local needs prior to submitting these Standards to the appropriate Registration Agency for approval.

6. RELATED INSTRUCTION OUTLINE (See attached Related Instruction Outline)

The sponsor may modify the related instruction to meet local needs prior to submitting these Standards to the appropriate Registration Agency for approval.

Appendix A11

WORK PROCESS SCHEDULE

The term of the occupation shall be defined by the attainment of all competencies, both technical and behavioral, of the position, which would be expected and approximated to occur within 3,500-4,000 hours of OJL, supplemented by a minimum of 144 hours of related instruction per year of apprenticeship.

Apprenticeship Competencies – Technical

Item	Work Processes	Approx. Hours
A	Maintain a safe working environment – OSHA education	300
B	Demonstrates basics of measurement, materials/parts, and installation of tools	400
C	Operates manufacturing equipment, both lathe and mill	400-500
D	Conducts general housekeeping and routine maintenance	400-500
E	Troubleshoot programs and machine problems	300
F	Communicate problems effectively to peers, leadership, and other involved persons	300
G	Ability to identify the need to escalate problems/solutions quickly	500
H	Ability to follow work instructions and identify potential problems or mistakes within the work instructions	300
I	Ability to identify improper feeds/speed/moves	300-400
J	Demonstrate an understanding of general G/M codes and their meaning and use	300-500
	Total hours (approximate)	3,500-4,000

The above on-the-job-learning (OJL) work process competencies are intended as a guide. It need not be followed in any sequence, and it is understood that some adjustments may be necessary in the hours allotted for different work experience. In all cases, the apprentice is to receive sufficient experience to make them fully competent and use good workmanship in all work processes, which are a part of the industry. In addition, the apprentice shall be fully instructed in safety and OSHA requirements.

Apprenticeship Competencies – Behavioral

In addition to mastering all the essential technical competencies, an apprentice must consistently demonstrate at an acceptable level the following behavioral competencies, to complete the apprenticeship.

Item #	Behavioral Competencies
1.	Participation in team discussions/meetings
2.	Focus in team discussions/meetings
3.	Focus during independent work
4.	Openness to new ideas and change
5.	Ability to deal with ambiguity by exploring, asking questions, etc.
6.	Knows when to ask for help
7.	Able to demonstrate effective group presentation skills
8.	Able to demonstrate effective one-on-one communication skills
9.	Maintains an acceptable attendance record
10.	Reports to work on time
11.	Completes assigned tasks on time
12.	Uses appropriate language
13.	Demonstrates respect for patients, co-workers, and supervisors
14.	Demonstrates trust, honesty, and integrity
15.	Requests and performs work assignments without prompting
16.	Appropriately cares for personal dress, grooming and hygiene
17.	Maintains a positive attitude
18.	Cooperates with and assists co-workers
19.	Follows instructions/directions
20.	Able to work under supervision
21.	Able to accept constructive feedback and criticism
22.	Able to follow safety rules
23.	Able to take care of equipment and workplace
24.	Able to keep work area neat and clean
25.	Able to meet supervisor's work standards
26.	Able to not let personal life interfere with work
27.	Adheres to work policies/rules/regulations

RELATED INSTRUCTION OUTLINE

The related instruction has been developed in cooperation with employer-partners as part of the apprenticeship. The following is a set of courses to be delivered by subject matter experts.

Related Technical Instruction (RTI) - This instruction shall include, but not be limited to, at least 144 hours per year for each year of the apprenticeship. The related theoretical education listed below is tightly integrated with real work product. The curriculum is defined as a variety of classes, around which the exams and projects are based. By defining the RTI this way, all competencies required of the students are met, through project work.

COURSE TOPICS	HOURS	UNITS
A. Quality Control	45	3
B. Metallurgy I	45	3
C. Inspection Techniques	45	3
D. Computer-Aided Manufacturing I	60	4
E. Computer-Aided Manufacturing II	60	4
F. Technical Print Reading	45	3

COURSE TOPIC DESCRIPTIONS

A. MPT 140 – Quality Control

This course introduces students to the fundamental principles and practices of industrial quality control. Total Quality Management (TQM), LEAN Manufacturing, Acceptance Sampling Systems, and Continual Improvement are discussed in depth.

B. MTT 150 – Metallurgy I

This course offers a study of metallurgical properties in an effort to understand both the behavior of metals and their service to industry. Characteristics during heating, cooling, shaping, forming, and the stresses related to their mechanical properties are covered. The theory behind the alloys, heat treatment processes, and the impact they have on strength, toughness, hardness, elasticity, ductility, malleability, wear resistance and fatigue resistance are investigated.

C. MTT 140 – Inspection Techniques

This course exposes the student to the principles of dimensional metrology and explores Geometric Dimensioning and Tolerancing (GD&T) concepts and applications. Students will learn how to use common measuring instruments relating to state-of-the-art manufacturing environments. Students will also learn the importance of Quality Control, TQM, and SPC processes as they relate to manufacturing environments.

D. MTT 292 – Computer-Aided Manufacturing I

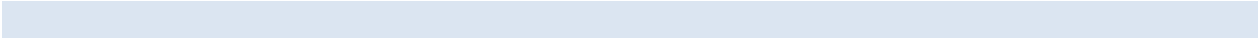
This course provides the student with the essential concepts and techniques that are required for successful creation of two-dimensional part geometry, generation and verification of 2 ½ axis toolpath models, as well as post processing of 2 ½ axis NC codes within a computer-aided manufacturing (CAM) system. Students are required to produce a variety of lab exercises on robotic (CNC) machinery utilizing multi-tool programs. Coursework will primarily focus on 2D geometry projects.

E. MTT 293 – Computer-Aided Manufacturing II

This course is a continuation of MTT 292 with the addition of simultaneous three axis motion control and provides the student with the essential concepts and techniques that are required for successful creation of three-dimensional part geometry, solids, and surfacing, generation and verification of three axis tool path models, as well as, post processing of three axis NC codes within a computer-aided manufacturing (CAM) system. Requires students to produces a variety of lab exercises on robotic (CNC) machinery utilizing multi-tool programs.

F. MTT 120 – Technical Print Reading

This course provides the fundamental concepts in reading and interpreting technical prints utilized by machining, engineering, and welding industries. This course focuses on print reading from the perspective of the manufacturing technician and covers topics ranging from introductory to advanced print reading skills.



SECTION 27 - OFFICIAL ADOPTION OF APPRENTICESHIP STANDARDS

Truckee Meadows Community College and Workforce hereby adopts these standards of apprenticeship.

Sponsor(s) designate the appropriate person(s) to sign the standards on their behalf.

Signature of Sponsor (*designee*)

Date: _____

Diane Ferguson, Program Manager
Type Name & Title