



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

Appendix A2

WORK PROCESS SCHEDULES AND RELATED INSTRUCTION OUTLINE

*Truckee Meadows Community College
and Workforce Connections*

CNC Machine Operator

O*NET-SOC CODE: 51-4034.00 RAPIDS CODE: 1094CB

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 A2

WORK PROCESS SCHEDULE CNC MACHINE OPERATOR O*NET-SOC CODE: 51-4034.00 RAPIDS CODE: 1094CB

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 4,000-6,000 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 \$23.00.

2-Year Term Example:

1 st	6 months = 65%	2 nd	6 months = 75%
3 rd	6 months = 85%	4 th	6 months = 95%

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 A2

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 4,000-6,000 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	300-450
B	Review prints and written specifications for a job	300-450
C	Understanding of basic cutting tools and their uses	300-450
D	Demonstrates basic understanding of materials and their differences	300-450
E	Understanding and use of basic inspection equipment	300-450
F	Demonstrates understanding of inspection requirements and intervals	800-1200
G	Demonstrates understanding of machine controller and ability to load programs into it	100-150
H	Set the controls and make the cuts	100-150
I	Monitor the machine and make needed adjustments	500-750
J	Use both simple and highly sophisticated measuring tools to check accuracies	200-300
K	Work with leadership on CNC programs with support as needed	200-300
L	Communicate problems effectively to peers, leadership, and other involved persons	400-600
M	Perform routine maintenance	200-300
	Total hours (approximate)	4000-6000

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	CREDITS
A. English Communications Course	45	3
B. General Industry Safety	15	1
C. Introduction to Machine Shop	45	3
D. Technical Print Reading	45	3
E. Quality Control	45	3
F. Computer-Aided Manufacturing I	60	4
G. Computer Numerical Control I	60	4
H. Computer Numerical Control II	60	4
I. Machine Shop I	45	3
J. Machine Shop II	45	3

COURSE TOPIC DESCRIPTIONS

A. ENG 107 – Technical Communications (or other approved English course)

Introduction to expository methods with concentration on specific writing forms including memorandums, cover and business letters, formal and informal reports, manuals, and proposals. Suggested for students in occupational fields.

B. OSH 222 – General Industry Safety

This is a general safety course for an industrial environment. Students will learn OSHA regulations, personal safety and understand the importance of safe work habits.

C. MTT 101 – Introduction to Machine Shop

Introduces safety procedures, use of bench tools, layout tools, power saws, drill presses, precision measurement tools, rotary tables and indexing devices, lathe and mill cutting tools and tool holding, work holding and machining applications as well as the various hand tools related to the machine shop.

D. 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.

E. 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.

F. 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.

G. MTT 230 – Computer Numerical Control I

Covers computer numerical control (CNC) lathe operations, program format, and machine setup. G & M codes, control functions, the letter address system, and math issues related to CNC are included. Students will program, set-up and produce a variety of CNC lathe projects.

H. MTT 232 – Computer Numerical Control II

Covers computer numerical control (CNC) milling operations, program format, and machine setup. G & M codes, control functions, the letter address system, and math issues related to CNC are included. Students will program, set-up and produce a variety of CNC milling projects.

I. MTT 105 – Machine Shop I

Introduces basic lathe applications which will consist of identifying lathe components and controls, understanding turning safety, calculating speeds and feeds, using various tools and tool holders, identifying basic tool geometry, and the use of common lathe tooling. Students will perform basic lathe operations, which will consist of facing, turning, and drilling. Students will be required to produce specified parts to a tolerance of +/- 0.004in. and perform competencies set by manufacturing standards.

J. MTT 110 – Machine Shop II

This course is a continuation of MTT 105 and teaches students to prepare single pint external and internal unified screw threads, generate angles with the compound rest within one degree, ream holes concentric within .001 inches, determine cutting speeds, and perform facing, grooving, part-off, and tuning operations.

SECTION 27 - OFFICIAL ADOPTION OF APPRENTICESHIP STANDARDS

Truckee Meadows Community College and Workforce Connections 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