Course Assessment Report
Washtenaw Community College

Discipline	Course Number	Title
Numerical Control	100	NCT 100 06/30/2024-Foundation Concepts for Manufacturing (CNC)
College	Division	Department
Advanced Technologies and Public Service Careers	Advanced Technologies and Public Service Careers	Advanced Manufacturing
Faculty Preparer		Andrew Dubuc
Date of Last Filed Assessment Report		

I. Review previous assessment reports submitted for this course and provide the following information.

1. Was this course previously assessed and if so, when?

   No

2. Briefly describe the results of previous assessment report(s).

   3.

4. Briefly describe the Action Plan/Intended Changes from the previous report(s), when and how changes were implemented.

   5.

II. Assessment Results per Student Learning Outcome

Outcome 1: Demonstrate use of appropriate gauges to measure part dimensions.

- Assessment Plan
  - Assessment Tool: Student achievement checklist
  - Assessment Date: Winter 2022
  - Course section(s)/other population: All sections
  - Number students to be assessed: All students

- How the assessment will be scored: Departmentally-developed rubric
- Standard of success to be used for this assessment: 70% of all students will score 70% or higher.
- Who will score and analyze the data: Departmental faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2023, 2022	2024, 2023	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
70	61

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students who completed the assessment were included. Students withdrew or stopped attending class.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

This course is generally offered in two sections per day (afternoon and evening) and assessment data was available for both sections.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

This learning outcome involves accurate measurement of physical objects using hand tools (rules/rulers, calipers, micrometers, and a few specialty tools). The activity has two questions for each type of tool, and the common tools have additional measurements that are designed to be more difficult. Each measurement covers both techniques to perform measurement as well as reading the results.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

57/61 students (93%) scored 70% or higher, meeting the standard of success.

The average scores are as follows:
Fall 2022: 8.8 out of 10 possible
Winter 2023: 9.3 out of 10 possible
Fall 2023: 8.6 out of 10 possible
Winter 2024: 8.4 out of 10 possible
Average of all students is 8.8

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

The average correct score (88%) shows that most students were able to measure the majority of the items correctly, with perhaps 1 or 2 incorrect scores. The outlying incorrect questions were often the "higher difficulty" measurements that require extra time to interpret.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

The score data is a mixture of students that measured each item correctly (100%) along with some that missed 2 or 3 questions, creating the final average of 88% across all students. For the students that missed multiple questions, additional practice is needed to increase their confidence.

Outcome 2: Demonstrate knowledge of machine axis and basic operation of manufacturing equipment.

- Assessment Plan
    - Assessment Tool: Student achievement checklist
    - Assessment Date: Winter 2022
    - Course section(s)/other population: All sections
    - Number students to be assessed: All students
    - How the assessment will be scored: Departmentally-developed rubric
    - Standard of success to be used for this assessment: 70% of all students will score 70% or higher.
    - Who will score and analyze the data: Departmental faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2023, 2022	2024, 2023	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
70	64

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students who completed the assessment were included. Some students withdrew or stopped attending class.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

This course is generally offered in two sections per day (afternoon and evening) and assessment data was available for both sections.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

This learning outcome involves the hands-on setup of two machine tools, which takes place at the end of the semester as part of the final exam. Students must interpret the instructions that describe the tools and coordinate system in use, then operate the machine to accomplish it.
The instructions (manuscript) create a checklist broken into these areas:
2 points: aligning the machine
4 points: set up of work coordinates on a milling machine
4 points: set up of tool coordinates on a lathe turning machine

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes
60/64 students (94%) scored 70% or higher, meeting the standard of success. The average scores are as follows: Fall 2022: 9.0 out of 10 possible Winter 2023: 8.3 out of 10 possible

Fall 2023: 9.2 out of 10 possible
Winter 2024: 8.6 out of 10 possible
Average of all students is 8.8

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

This hands-on activity is a good way to judge their abilities in the course, especially because it takes place as part of the final. The final exam also includes "written" questions but the hands-on portion is more indicative of the students' ability to perform these setup tasks at the machines. The average score of 88% shows a strong comprehension which might be able to be boosted up with additional practice.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

The machine setup activity has a few groupings of tasks that are identical, such as performing the same coordinate procedure twice, or programming the machine to use multiple tools which requires the same process. Some of the students scored correct on one question but missed the other question. We need to determine why this discrepancy takes place, since I would expect the grouping of questions to be either both correct or both incorrect rather than a mixture. The average result is still high on average but I would prefer to see 100% scores.

III. Course Summary and Intended Changes Based on Assessment Results

1. Based on the previous report's Intended Change(s) identified in Section I above, please discuss how effective the changes were in improving student learning.

There was no previous assessment report.

2. Describe your overall impression of how this course is meeting the needs of students. Did the assessment process bring to light anything about student achievement of learning outcomes that surprised you?

This course is heavily structured to be as hands-on as possible while also including the lecture components to provide information to support the lab tasks. I believe the best way to assess the students' abilities (whether graded or not) must be hands-on in the same methods, and the assessment tools are a good extension of that goal. The assessment process showed satisfactory results in the two outcomes and I feel those two tools are a correct match for the skills practiced in the course on the day-to-day basis.

3. Describe when and how this information, including the action plan, was or will be shared with Departmental Faculty.

I will discuss the results before the upcoming semester with the two other instructors for the course.

4. Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Assessment Tool	Outcome 2 involves a hands-on proficiency task that must be completed within a certain time due to the logistics of allowing each student sufficient time to complete the task. I would like to investigate other ways to perform this proficiency without the time limit.	The time limitation sometimes creates anxiety for some students. If we can judge their abilities without a time limit, results may change slightly.	2025

5. Is there anything that you would like to mention that was not already captured?

6.

III. Attached Files

Score results

Faculty/Preparer: Andrew Dubuc **Date:** 06/30/2024
Department Chair: Allan Coleman **Date:** 07/03/2024
Dean: Eva Samulski **Date:** 07/12/2024
Assessment Committee Chair: Jessica Hale **Date:** 08/08/2025