Course Assessment Report
Washtenaw Community College

Discipline	Course Number	Title
Machine Tool Technology	102	MTT 102 12/13/2018-Machining for the Technologies
Division	Department	Faculty Preparer
Advanced Technologies and Public Service Careers	Industrial Technology	Jeffrey Donahey
Date of Last Filed Assessment Report		11/07/2016

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: Recognize safety rules and safe work practices in machine shop.

- Assessment Plan
  - Assessment Tool: department tests (Blackboard)
  - Assessment Date: Winter 2019
  - Course section(s)/other population: all
  - Number students to be assessed: all
  - How the assessment will be scored: Answer key
  - Standard of success to be used for this assessment: 80% of students must score 100% on the safety quizzes before the due date.

- 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)
2018, 2017, 2016, 2015, 2014	2018, 2017, 2016, 2015, 2014	2018

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

# of students enrolled	# of students assessed
339	339

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 in all sections were assessed.

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 taught on campus in a face-to-face format.

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

All students in all sections were given seven multiple-choice safety quizzes through Blackboard. The quizzes were scored using an answer key. The number and percentage of correct answered was recorded.

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
The standard of success asked that 80% of the students scored 100% on the quizzes by the due date. In the eleven semesters assessed, 80% or more of the students scored 100% on the quizzes. Only in fall 2018, did students fall below the standard with 75% of the students scoring 100%.

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

Students must pass the safety quizzes with 100% to use the machine tools in the lab. The students who did not score 100% by the due date were remediated and eventually able to score 100% and proceed with the course activities. The requirement that students must score 100% on the safety quizzes before using potentially hazardous equipment is essential for their well-being.

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.

Students who failed to meet the standard of success did so only by failing to pass the quizzes by the established due dates.

Outcome 2: Perform precision measurements with dial calipers.

- Assessment Plan
    - Assessment Tool: Measuring Exercise
    - Assessment Date: Winter 2019
    - Course section(s)/other population: all
    - Number students to be assessed: all
    - How the assessment will be scored: This will be scored using a departmentally-developed rubric.
    - Standard of success to be used for this assessment: 75% of the students will score 85% 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)
2018, 2017, 2016, 2015, 2014	2018, 2017, 2016, 2015, 2014	2018

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

# of students enrolled	# of students assessed
339	339

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 in all sections were assessed.

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.

All sections of this course are taught on campus in a face-to-face format.

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

Students had to measure 16 blocks using a dial caliper within the specified tolerances. The results were scored using an answer key.

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: No

In four of the eleven semesters, students scored an average of 85% or higher on the tasks. This is an extremely high standard of success with students needing to measure 14 of 16 blocks correctly. However, it is an essential skill we will continue to address.

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

Students were learning this important skill but its relevance became clear when they started to apply it to their projects. This skill has to be developed over time, as most precision skills need to be. Their performance progressed as they worked on their projects and recognized the need for high precision measurements.

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.

While one option would be to lower the standard of success, we will continue with it as written. Our current population of students require more practice working with their hands and manipulating precision measuring tools. In addition, they need more practice reading a dial caliper.

In the future, dial calipers will be obsolete and students will use digital calipers. Digital calipers do not require reading the dial correctly, only aligning the instrument correctly.

Outcome 3: Setup and safely operate the band saw, vertical mill and lathe.

- Assessment Plan
    - Assessment Tool: Capstone project including the parts and the assembled product
    - Assessment Date: Winter 2019
    - Course section(s)/other population: all
    - Number students to be assessed: all
    - How the assessment will be scored: Departmentally-developed rubric for the bezel, the legs and the assembled product.
    - Standard of success to be used for this assessment: 85% of the students will score 80% 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)
2018, 2017, 2016, 2015, 2014	2018, 2017, 2016, 2015, 2014	2018

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

# of students enrolled	# of students assessed
339	339

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 in all sections were assessed.

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 taught on-campus in a face-to-face format.

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

Students completed two project for this student learning outcome. The first is the bezel project where they use both the band saw and the mill to create a bezel to hold a lens for a tripod magnifying glass. This project was scored with a departmentally-developed rubric that looked at whether or not each feature's shape, size and position was within the specified tolerance. The second project required students to use the lathe to create three legs within the specified tolerance. The legs are used in the tripod magnifying glass holder. This project was scored with a departmentally-developed rubric that looked at whether or not each feature's shape, size and position was within the specified tolerance.

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: No
In seven of the eleven semesters 85% of the students scored 80% or higher on the bezel project. In the four semesters where they didn't meet the standard of success 70%, 71%, 80% and 75% of the students scored 80% or higher. This meets the standard of success for the course. In two of the eleven semesters 85% of the students scored 80% or higher on the leg project. In all other semesters 70% or more of the students scored 80% or higher. Overall, this falls below the established standard of success established for this outcome.

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

Students are more successful with the bezel project, which requires them to use the band saw and mill. In seven of the eleven semesters, students exceeded the standard of success for this student learning outcome. Students seem to be more successful on the bezel project than the legs because of where the projects fall in the semester. The legs project is the last project of the semester and often students are running short on time to complete that task. In addition, the bezel task is new to them and they often spend more time working on this project than the legs.

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.

While the legs are simpler, it requires precision work to make them within tolerance. Because there are 3 legs, students have difficulty repeating their work at the same level and with the same accuracy on each leg. In addition, there is one feature on the leg that is more difficult for students. It requires a visual alignment of the tool, which is a skill that is developed over time.

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.

2.

3. 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?

While I expected students to perform reasonably well, I recognized that the legs project receives the lowest scores in the semester because of their need to rush and complete it before the end of the semester. While we continue to give them a schedule that provides some cushion to finish the project, it is not often followed.

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

This report will be e-mailed to departmental faculty.

5. Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
No changes intended.			

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

7.

III. Attached Files

MTT 102 data

Faculty/Preparer:	Jeffrey Donahey	**Date:**	12/13/2018
Department Chair:	Thomas Penird	**Date:**	01/08/2019
Dean:	Brandon Tucker	**Date:**	01/16/2019
Assessment Committee Chair:	Shawn Deron	**Date:**	03/12/2019

Course Assessment Report
Washtenaw Community College

Discipline	Course Number	Title
Machine Tool Technology	102	MTT 102 08/25/2016-Machining for Auto Applications
Division	Department	Faculty Preparer
Advanced Technologies and Public Service Careers	Industrial Technology	Jeffrey Donahey
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: Understand and apply safety rules and safe work practices in machine shop.

- Assessment Plan
  - Assessment Tool: department tests (Blackboard)
  - Assessment Date: Winter 2006
  - Course section(s)/other population: all
  - Number students to be assessed: all
  - How the assessment will be scored:
  - Standard of success to be used for this assessment:

- Who will score and analyze the data:

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)
2015	2016	

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

# of students enrolled	# of students assessed
68	60

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.

Eight students withdrew from the course prior to completing this task.

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.

All students in all sections were assessed. This course is taught in a face-to-face mode only.

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

Students completed seven safety quizzes in Blackboard. The multiple choice questions were scored electronically using an answer key. Students could take the quiz multiple times, but only the submissions before the deadline were assessed.

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
93% (56 of 60 students) scored 100% on the quizzes before the due date. This exceeded the standard of success which was 80% of the students score 100% before the due date.

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

Student performance exceeded the goal for this outcome, with 93% of the students scoring 100% before the due date. Each student was required to score 100% on each quiz before they were permitted to work on the equipment. This was a motivating factor in the student's success.

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.

Some students stated that they don't have access to a computer to take the quiz. We will intervene earlier and inform students where they can access computers on campus.

Outcome 2: Precision measurement with dial calipers.

- Assessment Plan
    - Assessment Tool: competency testing
    - Assessment Date: Winter 2006
    - Course section(s)/other population: all
    - Number students to be assessed: all
    - How the assessment will be scored:
    - Standard of success to be used for this assessment:
    - Who will score and analyze the data:

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)
2015	2016	

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

# of students enrolled	# of students assessed
68	60

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.

Eight students withdrew from the course.

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.

All students in all sections were assessed. This course is taught only in face-to-face mode.

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

Students measured 16 blocks using a dial caliper. They recorded the measurements and they were scored as correct or incorrect if the measurements fell within the margin of error (+/- 0.002 inches). Their overall score was calculated as the percentage of correct responses.

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: No
72% of the students scored 90% or higher. This does not meet the standard of success which was identified as 75% of the students would score 90% or higher. Based on this high standard of success, students can only make one error out of 16 measurements (due to the mathematical calculation). Students who make two errors would score 88%. Students are doing very well on measuring within tolerances.

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

Students did very well (70% of the students made either no mistakes or 1 mistake).

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.

Students did not meet the standard of success on this outcome because of the number of blocks measured resulted in students having to make only one mistake in order to be considered successful. 15 of 16 = 93.75%; 14 of 16 = 87.5%, which is just below the cut-off. When looking at the near-misses, 82% of the students scored 85% or higher. While there are several options (adding blocks or giving partial credit) to make it easier to achieve the standard of success, we believe that a high standard is

necessary. We will continue to reinforce the importance of accuracy when doing precision measurements.

Outcome 3: Setup and operation of band saw, vertical mill, lathe and surface grinder.

- Assessment Plan
    - Assessment Tool: capstone project
    - Assessment Date: Winter 2006
    - Course section(s)/other population: all
    - Number students to be assessed: all
    - How the assessment will be scored:
    - Standard of success to be used for this assessment:
    - Who will score and analyze the data:

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)
2015	2016	

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

# of students enrolled	# of students assessed
68	59

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.

Nine students withdrew from the course prior to completing the capstone project.

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.

All students in all sections were assessed. This course is taught in face-to-face mode only.

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

Students used the saw, mill and lathe to make a bezel, legs and the lens. These pieces were assembled into the capstone project. The capstone project was scored based on whether it assembled correctly or not. Students scored either 100% or 0%.

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

95% (56 of 59 students) scored 100% on the capstone project. This exceeds the standard of success which states that 75% of the students would score 90% or higher.

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

Students did very well creating the parts and being able to assemble them into the capstone projects.

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.

Anecdotally, students have more difficulty machining three identical legs. Students need additional practice on this skill in order to be consistent and successful.

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.

2.

3. 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?

Nothing was particularly surprising other than recognizing the trap we set when calculating the standard of success for outcome #2. This course is doing very well to serve the student's needs. It provides both the safety knowledge, machining and precision measuring skills. These skills require repetition to become proficient and consistent. We plan to continue to provide those opportunities to students.

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

This report will be shared with all faculty at a departmental meeting. The master syllabus will also be updated.

5. Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Other: rubric/standard of success	We will review the standard of success and align it with the possible scores. Rubrics will also be reviewed to better reflect the abilities of the students by awarding partial credit based on the measurement.	We want to be able to provide an accurate assessment of students ability to perform precision measurements. We will also look at the capstone project since that is also scored by either earning 100% or 0%.	2017

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

7.

III. Attached Files

MTT 102 data

Faculty/Preparer:	Jeffrey Donahey	**Date:**	08/25/2016
Department Chair:	Thomas Penird	**Date:**	08/27/2016
Dean:	Brandon Tucker	**Date:**	10/03/2016
Assessment Committee Chair:	Michelle Garey	**Date:**	11/02/2016