**Course Assessment Report**
**Washtenaw Community College**

| Discipline | Course Number | Title |
|---|---|---|
| Numerical Control | 201 | NCT-201 Geometric Dimensioning and Tolerancing (GD&T) |
| 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 | | n/a |

**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; this course has never been assessed.

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

   n/a

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

   n/a

**II. Assessment Results per Student Learning Outcome**

Outcome 1: Identify GD&T symbols and rules as well as their applications.
Assessment Plan

- Assessment Tool: Outcome-related final exam questions
- Assessment Date: Fall 2027
- Course section(s)/other population: All sections
- Number students to be assessed: All students
- How the assessment will be scored: Answer key
- Standard of success to be used for this assessment: 70% of students will score a 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) |
|---|---|---|
| -- | 2025 | -- |

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

| # of students enrolled | # of students assessed |
|---|---|
| [was auto populated from CurricUNET – leave blank] | 7 |

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

| This learning outcome is assessed using quiz questions that cover the first portion of the semester. Questions were gathered from the first two quizzes; the first quiz re-visits introductory topics with greater comprehension, the second quiz covers entirely new material that feeds into the remainder of the NCT-201 class in a wide context. Note the Master Syllabus indicates that a “final exam” should be utilized to assess this outcome, but the student group didn’t have time to complete the traditional exam due to their capstone project, so I utilized other test-style data questions which covered identical material. |
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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: |
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| For Outcome 1, 100% of students scored 70% or higher. The standard of success was met. |

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

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| The students scored high enough to fulfill this learning outcome, and the material within this learning outcome covered a large amount of information from the book (8 chapters) so I believe it shows they understand the basics with some room to emphasize weaker topics. |

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.

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| The quizzes came directly from the book author's supplementary teaching resources, so they were heavily related to the book's content. None of the students achieved a perfect score. To improve results, we could use an actual final exam as the assessment tool (taking place after they've already seen the material once in quiz form) or break the quizzes into shorter versions to allow easier study and practice. Both options can be attempted. |

Outcome 2: Apply measurement techniques on form, position, and orientation for part features.

Assessment Plan

- Assessment Tool: Outcome-related components of the capstone project
- Assessment Date: Fall 2027
- Course section(s)/other population: All sections
- Number students to be assessed: All students
- How the assessment will be scored: Answer key
- Standard of success to be used for this assessment: 70% of students will score a 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) |
|---|---|---|
| -- | 2025 | -- |

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

| # of students enrolled | # of students assessed |
|---|---|
| [was auto populated from CurricUNET – leave blank] | 7 |

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 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.

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| All students were assessed. |

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

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| As a capstone project, students work to build a single combined assembly of 3D printed components. Each student builds a portion of the total assembly, and the components are intended to mate together if the proper design methods are utilized. Learning Outcome #2 relies on rubrics to assess whether the students applied the techniques while working together. The rubrics allow students to re-submit work to earn a higher score based on instructor feedback. |

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: |
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| For Outcome 2, 100% of students scored 70% or higher. The standard of success was met. |

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

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| This outcome is the most technical of all the course aspects, as it involves creating multiple blueprints using measurement data. Creation of the blueprints was accomplished via PC software which allowed the students to adjust their work after receiving feedback. Creating a “perfect” student submission is difficult, so most students would not be expected to score 100%, and the rubric scores are realistic. |

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.

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| This learning outcome covered the culmination of multiple rubrics. Most of the rubrics were scored around 70-80%, which is a little on the low side compared to the group's successful final capstone assembly. The capstone project result was successful, so adjusting the balance on rubric points might help to emphasize areas that were successful as intended. This was the first semester attempting to perform this group capstone project, so some refinement will be useful. |

Outcome 3: Apply GD&T knowledge to design a set of components for assembly.
Assessment Plan

- Assessment Tool: Capstone project
- Assessment Date: Fall 2027
- Course section(s)/other population: All sections
- Number students to be assessed: All students
- How the assessment will be scored: Answer key
- Standard of success to be used for this assessment: 70% of students will score a 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) |
|---|---|---|
| -- | 2025 | -- |

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

| # of students enrolled | # of students assessed |
|---|---|
| [was auto populated from CurricUNET – leave blank] | 7 |

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.

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|---|
| All students 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.

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|---|
| All students were assessed. |

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

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| Using the same capstone project from Learning Outcome #2, this third learning outcome relies on grading multiple aspects of the build project. Grades are calculated from (1) initial blueprint drawings, (2) building test parts, (3) building fixtures utilized to measure items, (4) building the final components, and (5) presenting their aspect of the project in a final report. |

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: |
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| For Outcome 3, 100% of students scored 70% or higher. The standard of success was met. |

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

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| The students worked together to design and fabricate a set of components that will mate together (a rolling trailer with wheels). Each student completed their aspect of the project except for one student who wasn't able to make adequate adjustments after measuring their test component(s). Other than that outlier, each member of the group finished their portion of the assembly. |

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.

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| While each student was able to finish their individual aspect of the project, some had less time to spend on the later refinement phase of the project. I'd like to investigate utilizing a quiz or test to grade the students based on college-supplied components, instead of utilizing the student-built project which carried some time constraints that were easier for some students to work around than others. |

**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.

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| This course has never been assessed; it was submitted for conditional approval after an initial set of data could be compiled. |

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?

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| The course assessment only covers one semester of source data, but the standards of success appear to show a positive result. The course has a mixture of highly-technical theoretical measurements (related to how an object's shape can have variations based on its physical measurement), and this type of technical data isn't explored in other related courses. I believe the application of the technical data within real-world situations is the final goal, and we now have a positive baseline from this initial student group. |

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

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| The course's instructor shared their assessment data with me and other department faculty; we'll implement changes moving forward. |

4. Intended Change(s)

| Intended Change (e.g. Course material, assessment tool, outcome language, objectives, prereqs, course assignments, other) | Description of the change | Rationale | Implementation Date |
|---|---|---|---|
| Assessment Tool | Update the assessment tool for Outcome #1 to "Outcome-related quiz questions." | Currently, the tool is "Outcome-related final exam questions." The quiz questions will be a more reliable tool, but we should explore breaking up the quizzes into shorter versions to allow for more effective studying, learning and assessment of the course material. | Winter 2027 |
| New lab exercises | I plan to add a handful of supplementary measurement exercises that will | This course is already categorized as a partial lecture/lab so adding additional | Fall 2026 |

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| | assist in the technical aspects of the learning objectives. These measurements are discussed throughout the book so we should demonstrate them. | hands-on lab exercises is easy to implement without syllabus revision. | |
| Learning outcome language | Change verbiage to use rubrics or student-achievement checklists rather than an "answer key". | Currently, the capstone-related outcome assessment tools reference an "answer key," but this doesn't exist for student-created components. Those items are evaluated via rubric which we should note in the master syllabus. | Fall 2026 |
| Additional practice exercises in-class or online | Add more technical measurement practice as described in the book. | Students already work to measure items in the lab setting, but we can create exercises "on paper" to increase comprehension prior to being graded on a quiz/exam. | Fall 2026 |
| New book | Investigate other book options from alternate sources. | Some aspects of the required book are very repetitive while other examples found in the book are limited to practical use. We might be able to choose an alternate book to use for the course. | Winter 2027 |

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

Note this course was conditionally approved, but its first semester didn't have adequate assessment data provided from Winter 2024. The data in this assessment report was sourced from its second offering in Winter 2025, which had a higher headcount and much better quantified data.

Included files: Excel file "NCT-201 Assessment data 2026 Feb.xlsx"

Please include your assessment data with your report as well. Can be a separate attachment

Please contact Ben Linford (bjlinford@wccnet.edu ext. 3374) or Sera Bird (sabird@wccnet.edu ext. 3706) for CurricUNET support, or assessment support (e.g. data collection/organization).

| **Title** | **Name** | **Signature** |
|---|---|---|
| **Initiator** | Andrew DuBuc | *Andrew DuBuc Feb 23, 2026* |
| **Dept Chair** | Allan Coleman | ***Al Coleman Feb 23, 2026*** |
| **Dean** | Eva Samulski | *Eva Samulski, Feb. 23, 2026* |
| **Assess. Chair** | Jessica Hale | *Jessica Hale October 26, 2026* |