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

| Discipline | Course Number | Title |
|---|---|---|
| Animation | 150 | ANI 150 07/30/2019-3D Animation I: Modeling |
| Division | Department | Faculty Preparer |
| Business and Computer Technologies | Digital Media Arts (new) | Kevin Bindschadler |
| 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: Apply principles of animation to create digital forms.

- Assessment Plan
  - Assessment Tool: Written responses on exams.
  - Assessment Date: Winter 2012
  - Course section(s)/other population: All
  - Number students to be assessed: Random sample of 50% of students in all sections, up to a maximum of 25.
  - How the assessment will be scored: Answer sheet.
  - Standard of success to be used for this assessment: 70% of students will score 70% or higher on the related test questions.

- 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 | 2018 | 2018 |

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

| # of students enrolled | # of students assessed |
|---|---|
| 153 | 54 |

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.

First, **153** students is inaccurate. Even if every class was registered to maximum capacity, the students would only total **108**. According to Blackboard, the total number of students should have been **95.** Ultimately, **54** students represents everyone who completed a Final Exam during these 4 semesters.

| Semester | CurricUNET | Max Capacity | Blackboard | Final Exam |
|---|---|---|---|---|
| **2018 Summer** | 20 | 24 | 22 | 13 |
| **2018 Winter** | 39 | 30 | 23 | 15 |
| **2018 Fall** | 48 | 24 | 22 | 19 |
| **2017 Fall** | 46 | 30 | 28 | 7 |
| **TOTALS** | **153** | **108** | **95** | **54** |

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 sampling of four semesters encompasses multiple time frames (daytime through evening classes), multiple seasons (Fall, Winter, and Spring/Summer semesters), and multiple class formats (on campus and fully online). This sample features two online classes and two on campus classes in order to ensure we are adequately assessing each format as they are both highly utilized.

| SEMESTER | TIME | FORMAT |
|---|---|---|
| **2018 Summer** | **Morning** | **On Campus** |
| **2018 Winter** | **Afternoon** | **Online** |
| **2018 Fall** | **Evening** | **On Campus** |
| **2017 Fall** | **Afternoon** | **Online** |

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

The phrasing of the two outcomes for ANI 150 as they currently stand is almost too broad to differentiate and understand clearly. Not surprisingly, several of the specific objectives are linked to both outcomes. The only clues to their intended differences are the objectives that aren't linked to both outcomes. Objectives 2, 3, and 4 are linked only to outcome 1 and seem to involve either other elements of the 3D pipeline aside from modeling or modeling theory/decision-making process.

Therefore, for the purposes of this assessment, I examined the effectiveness of outcome 1 (apply principles of animation to create digital forms) based on student responses on the Final Exam specifically with regards to a subset of ten questions (see TABLE 3 of the attached document for question details) selected because they focus on either modeling theory/decision-making or the non-modeling phases of the 3D production pipeline. Additionally, averages were calculated both per semester and per question to provide more information for analysis.

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 overall average for all ten selected questions for every student that attempted a Final Exam during the four designated semesters was **88.78%** (TABLE 2), and it is a good indication that much of the modeling theory and non-modeling phases of the 3D production pipeline are being understood. Furthermore, the average of all ten selected questions for every student that attempted a Final Exam within each semester were as follows (TABLE 2):

- 2017 Fall = **91.50%**
- 2018 Fall = **83.15%**
- 2018 Winter = **91.02%**
- 20118 Summer = **89.41%**

The standard of success for this outcome was set at "**70%** of students will score **70%** or higher", and the lowest averaging semester was **83.15%.** The standard of success was met for this outcome and tool.

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

Based on the Final Exam, the averages per question (see TABLE 2 and TABLE 3 of the attached document) give us some good insight into the knowledge that students are reflecting back on the Final Exam. I was pleased to see that one of the

highest scoring questions was “What is the first thing that you should do when starting a new scene/new assignment?” (Q 4). Setting up a new project or pointing to an existing project structure is really key to organizing and optimizing your workflow in the 3D software. Yet, because it is an extra step with no immediate visual feedback beginning students often struggle learning this and have to work twice as hard to unlearn bad habits later. It is also clear from the high scoring questions, that the identification of the theoretical components that make up polygon geometry is readily identified by the majority of students.

Based on the Polygon Final project scores (see TABLE 1), a Cleanliness score of **94.75%** across all four semesters shows students are understanding enough of clean modeling theory to avoid the major technical pitfalls of laminar faces, non-manifold geometry, and surface holes. A Surface Topology score of **85.25%** across all four semesters shows a solid foundational understanding of how to build quadrilateral surfaces that will smooth cleanly.

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.

Based on the Final Exam, the lowest per question averages (see TABLE 2 attached document) of the subset of ten questions was **75.61%** for Q 1, which focused on the “normal” or theoretical line oriented perpendicular to the surface of a polygonal face. The “normal” line is not displayed by default in the software. Practically, it tends to comes up more often in slightly more specialized troubleshooting, so I’m not completely surprised it scored low. Nonetheless, it is an important concept, so distributing an example 3D model with problematic normals that all students must visualize and fix might provide the hands-on experience with normals that is lacking when we cover it only at a theoretical level.

Another low scoring question of particular note was Q 3, which asks students to compare and contrast the two major modeling techniques (polygon modeling vs NURBS modeling) and averaged out at **83.67%**. This is one of the most important modeling decision-making questions and definitely needs to be addressed with increased emphasis moving forward. Additionally, this question was not even asked on the version of the Final Exam deployed in Fall of 2018, which stresses the need for structure that ensures questions important to assessment always get deployed every semester.

Based on the Polygon Final project (see TABLE 1), even though **85.25%** for Surface Topology across all four semesters is a great number for an introductory course, there is still room to improve the Surface Topology score with more detailed assignment feedback as students progress. Perhaps most alarming though is the lack of projects to evaluate the non-modeling phases of the 3D production pipeline (such as texturing, lighting, animation, and rendering) make success in

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| these areas difficult to assess. Therefore, I have proposed, and other departmental faculty have agreed, to include an additional all-encompassing ANI 150 final project that requires students to put NURBS modeling, polygon modeling, texturing, lighting, animation, and rendering all together. This is an ambitious add for an introductory class, but I have seen it work well in the past. |

Outcome 1: Apply principles of animation to create digital forms.

- Assessment Plan
    - Assessment Tool: Department review of project
    - Assessment Date: Winter 2012
    - Course section(s)/other population: All
    - Number students to be assessed: Random sample of 50% of students in all sections, up to a maximum of 25.
    - How the assessment will be scored: Departmentally-developed rubric
    - Standard of success to be used for this assessment: 70% of students will score an average of 3 or higher on the project.
    - 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 | 2018 | 2018 |

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

| # of students enrolled | # of students assessed |
|---|---|
| 153 | 20 |

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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| Since there was no consistent Blackboard rubric for the Polygon Final Project utilized across all the semesters of ANI 150 being assessed, it became necessary to develop and score projects based on a departmentally-developed rubric. Therefore **five** projects were selected at random from each of the **four** semesters for a total sample size of **20**. |

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 sampling of four semesters encompasses multiple time frames (daytime through evening classes), multiple seasons (Fall, Winter, and Spring/Summer semesters), and multiple class formats (on campus and fully online). This sample features two online classes and two on campus classes in order to ensure we are adequately assessing each format as they are both highly utilized.

| SEMESTER | TIME | FORMAT |
|---|---|---|
| **2018 Summer** | **Morning** | **On Campus** |
| **2018 Winter** | **Afternoon** | **Online** |
| **2018 Fall** | **Evening** | **On Campus** |
| **2017 Fall** | **Afternoon** | **Online** |

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

The phrasing of the two outcomes for ANI 150 as they currently stand is almost too broad to differentiate and understand clearly. Not surprisingly, several of the specific objectives are linked to both outcomes. The only clues to their intended differences are the objectives that aren't linked to both outcomes. Objectives 2, 3, and 4 are linked only to Outcome 1 and seem to involve either other elements of the 3D pipeline aside from modeling or modeling theory/decision-making process.

Exam questions are the more suitable tool for this assessment but, because the assessment plan requires it, I will also examine the effectiveness of outcome 1 (apply principles of animation to create digital forms) via student performance on the Polygon Final modeling project graded against a departmentally-developed assessment rubric.

The following process was repeated for each student in the 20-student sample group. A random number was generated and used to select a student based on which ever student occupied that place in the alphabetical class roster. The Polygon Final project was then scored based on a rubric. Here, we will only focus on the two relevant categories of evaluation that indicate modeling theory/decision making: Cleanliness and Surface Topology. (See TABLE 1 of attached document for details.)

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 |
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| According to the ANI 150 master syllabus, the "Standard of success to be used for this assessment: **70%** of students will score an average of 3 or higher", but whatever arbitrary scoring system the "3" belongs to has long since been lost. Therefore, I will revert to the same standard as used for the Final Exam and instead evaluate based on a score of **70%** or higher. Looking at the data (see TABLE 1 of the attached document), the student average per semester for Cleanliness was **94.75%** and for Surface Topology was **85.25%,** which were both well above **70%**. Even if you look at the averages within a given category by semester, the lowest average is **82.0%,** which still exceeds the **70%** threshold. Ultimately the average across these two categories for all four semesters works out to **90.00%**. So no matter how you slice it these students have met the standard of success for outcome 1. |

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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| Based on the Final Exam, the averages per question (see TABLE 2 and TABLE 3 of the attached document) give us some good insight into the knowledge that students are reflecting back on the Final Exam. I was pleased to see that one of the highest scoring questions was "What is the first thing that you should do when starting a new scene/new assignment?" (Q 4). Setting up a new project or pointing to an existing project structure is really key to organizing and optimizing your workflow in the 3D software. Yet, because it is an extra step with no immediate visual feedback beginning students often struggle learning this and have to work twice as hard to unlearn bad habits later. It is also clear from the high scoring questions, that the identification of the theoretical components that make up polygon geometry is readily identified by the majority of students.<br><br>Based on the Polygon Final project scores (see TABLE 1), a Cleanliness score of **94.75%** across all four semesters shows students are understanding enough of clean modeling theory to avoid the major technical pitfalls of laminar faces, non-manifold geometry, and surface holes. A Surface Topology score of **85.25%** across all four semesters shows a solid foundational understanding of how to build quadrilateral surfaces that will smooth cleanly. |

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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| Based on the Final Exam, the lowest per question averages (see TABLE 2 attached document) of the subset of ten questions was **75.61%** for Q 1, which focused on the "normal" or theoretical line oriented perpendicular to the surface of a polygonal face. The "normal" line is not displayed by default in the software. Practically, it tends to comes up more often in slightly more specialized troubleshooting, so I'm not completely surprised it scored low. Nonetheless, it is |

an important concept, so distributing an example 3D model with problematic normals that all students must visualize and fix might provide the hands-on experience with normals that is lacking when we cover it only at a theoretical level.

Another low scoring question of particular note was Q 3, which asks students to compare and contrast the two major modeling techniques (polygon modeling vs NURBS modeling) and averaged out at **83.67%**. This is one of the most important modeling decision-making questions and definitely needs to be addressed with increased emphasis moving forward. Additionally, this question was not even asked on the version of the Final Exam deployed in Fall of 2018, which stresses the need for structure that ensures questions important to assessment always get deployed every semester.

Based on the Polygon Final project (see TABLE 1), even though **85.25%** for Surface Topology across all four semesters is a great number for an introductory course, there is still room to improve the Surface Topology score with more detailed assignment feedback as students progress. Perhaps most alarming though is the lack of projects to evaluate the non-modeling phases of the 3D production pipeline (such as texturing, lighting, animation, and rendering) make success in these areas difficult to assess. Therefore, I have proposed, and other departmental faculty have agreed, to include an additional all-encompassing ANI 150 final project that requires students to put NURBS modeling, polygon modeling, texturing, lighting, animation, and rendering all together. This is an ambitious add for an introductory class, but I have seen it work well in the past.

Outcome 2: Use industry standard software to create 3D objects and properties.

- Assessment Plan
    - Assessment Tool: Written responses on exams.
    - Assessment Date: Winter 2012
    - Course section(s)/other population: All
    - Number students to be assessed: Random sample of 50% of students in all sections, up to a maximum of 25.
    - How the assessment will be scored: Answer sheet.
    - Standard of success to be used for this assessment: 70% of students will score 70% or higher on the related test questions.
    - 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) |
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| 2018, 2017 | 2018 | 2018 |

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

| # of students enrolled | # of students assessed |
|---|---|
| 153 | 54 |

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.

First, **153** students is inaccurate. Even if every class was registered to maximum capacity, the students would only total **108**. According to Blackboard, the total number of students should have been **95.** Ultimately, **54** students represents everyone who completed a Final Exam during these four semesters.

| Semester | CurricUNET | Max Capacity | Blackboard | Final Exam |
|---|---|---|---|---|
| **2018 Summer** | 20 | 24 | 22 | 13 |
| **2018 Winter** | 39 | 30 | 23 | 15 |
| **2018 Fall** | 48 | 24 | 22 | 19 |
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| **TOTALS** | **153** | **108** | **95** | **54** |

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 sampling of four semesters encompasses multiple time frames (daytime through evening classes), multiple seasons (Fall, Winter, and Spring/Summer semesters), and multiple class formats (on campus and fully online). This sample features two online classes and two on campus classes in order to ensure we are adequately assessing each format as they are both highly utilized.

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| **2018 Summer** | **Morning** | **On Campus** |
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| **2017 Fall** | **Afternoon** | **Online** |

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

The phrasing of the two outcomes for ANI 150 as they currently stand is almost too broad to differentiate and understand clearly. Not surprisingly, several of the specific objectives are linked to both outcomes. The only clues to their intended differences are the objectives that aren't linked to both outcomes. Objective 5 is linked only to outcome 2 and seems focused on the actual execution of the modeling within the 3D software.

Student work on projects is the most suitable tool for this assessment but, because the assessment plan requires it, I examined the effectiveness of outcome 2 (use industry standard software to create 3D objects and properties) based on student responses on the Final Exam specifically with regards to a subset of ten questions (see TABLE 5 of the attached document for question details) selected because they focus on specific modeling tools and commands. The ten questions include four NURBS modeling questions, four polygon questions, and two questions common to both. Additionally, averages were calculated (see TABLE 4) in these categories for all these areas per semester and per question to provide more information for analysis.

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

Even though the semester average of these ten questions for Summer 2018 came in significantly lower at **65.52%** (compared to **85.50%**, **83.55%**, and **85.64%**), the overall average for all ten selected questions for every student that attempted a Final Exam during the four designated semesters was **80.05%** (see TABLE 4 of the attached document).

The standard of success for this outcome was set at "**70%** of students will score **70%** or higher." Therefore the standard of success was met for this outcome and tool.

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

Based on the Polygon Final averages of each of the five categories for the departmentally-developed rubric, here are the top categories of student achievement:

- Appearance = **95.60%**
- Cleanliness = **94.75%**
- Complexity = **92.25%**

Appearance indicates that students are generating modeled surfaces that are realistically proportioned according to reference images. Cleanliness indicates that those surfaces are free from technical errors such as laminar faces, non-manifold geometry, or holes. Complexity indicates that students are stretching themselves to capture a fair amount of detail even though they are just starting to develop their 3D modeling skills.

Based on the Final Exam, questions that refer to practical modeling tools and commands common to both NURBS and polygon modeling were an area of particular strength as they averaged out to **95.63%**. Furthermore, student responses to the polygon modeling questions came out a respectable **84.88%,** indicating solid comprehension in this area.

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.

Based on the Polygon Final averages of each of the five categories for the departmentally-developed rubric, the two categories of student achievement that could be most improved would be:

- Surface Topology = **85.25%**
- Organization = **82.50%**

Organization within a 3D file is critical when working in studio context, as it makes it easier to pass a file to another artist for another phase in the production pipeline. Sometimes neglecting to follow proper naming conventions can break pipeline scripts or cause a file to crash on the render farm. Luckily, this is a relatively easy area to improve. Underscoring the motivation behind learning proper labeling and grouping habits for objects and files coupled with much stricter enforcement of this in the grading rubric, I believe, will improve this aspect.

Surface Topology, however, is not so easily improved. This really comes down to the central challenge of this course, which is to take someone with no prior experience and get them to build perfectly smoothable quad meshes. I am unsure of how to improve this area aside from possibly recommunicating that all full-time and part-time instructors that teach ANI 150 emphasize that a clean mesh should be able to be smoothed without causing issues. Development in this category simply requires continued practice.

Based on the Final Exam, there were some clear areas that are calling out for improvement. First of all, the average responses to the NURBS modeling questions came in at an unacceptable average of **67.44%**. This indicates that we need to reinforce the practical commands and tools relating to NURBS modeling

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| much more strongly, so they have a recall rate closer to the polygon question average. Secondly, I went out of my way to construct a question set that would reflect how we were doing in polygon vs. NURBS comprehension. This needs to be more specifically identified in the formal assessment on ANI 150, as this issue could have been glossed over with an overall question average of **80.05%**. Lastly, question P2 (see attached document) on the polygon modeling subset, which scored much lower than the other polygon questions and indicates the terminology for Boolean operations such as Boolean Union in this case, needs increased instructional emphasis. |

Outcome 2: Use industry standard software to create 3D objects and properties.

- Assessment Plan
    - Assessment Tool: Department review of project
    - Assessment Date: Winter 2012
    - Course section(s)/other population: All
    - Number students to be assessed: Random sample of 50% of students in all sections, up to a maximum of 25.
    - How the assessment will be scored: Departmentally-developed rubric
    - Standard of success to be used for this assessment: 70% of students will score an average of 3 or higher on the project.
    - 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) |
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| 2018, 2017 | 2018 | 2018 |

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

| # of students enrolled | # of students assessed |
|---|---|
| 153 | 20 |

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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| Since there was no consistent Blackboard rubric for the Polygon Final Project utilized across all the semesters of ANI 150 being assessed, it became necessary to develop and score projects based on a departmentally developed |

rubric. Therefore **five** projects were selected at random from each of the **four** semesters for a total sample size of **20**.

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 sampling of four semesters encompasses multiple time frames (daytime through evening classes), multiple seasons (Fall, Winter, and Spring/Summer semesters), and multiple class formats (on campus and fully online). This sample features two online classes and two on campus classes in order to ensure we are adequately assessing each format as they are both highly utilized.

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| **2018 Summer** | **Morning** | **On Campus** |
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| **2017 Fall** | **Afternoon** | **Online** |

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

The phrasing of the two outcomes for ANI 150 as they currently stand is almost too broad to differentiate and understand clearly. Not surprisingly, several of the specific objectives are linked to both outcomes. The only clues to their intended differences are the objectives that aren't linked to both outcomes. Objective 5 is linked only to outcome 2 and seems focused on the actual execution of the modeling within the 3D software.

I will examine the effectiveness of outcome 2 (use industry standard software to create 3D objects and properties) via student performance on the Polygon Final modeling project graded against a departmentally-developed assessment rubric.

The following process was repeated for each student in the 20-student sample group. A random number was generated and used to select a student based on which ever student occupied that place in the alphabetical class roster. The Polygon Final project was then scored based on a rubric that included five categories of evaluation (Cleanliness, Organization, Surface Topology, Appearance, and Complexity), and a student average was generated weighting each of the five categories equally. (See TABLE 6 of attached document for criteria details under each of the five categories.)

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 |
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| According to the ANI 150 master syllabus, the "Standard of success to be used for this assessment: **70%** of students will score an average of 3 or higher", but whatever arbitrary scoring system the "3" belongs to has long since been lost. Therefore, I will revert to the same standard as used for the Final Exam and instead evaluate based on a score of **70%** or higher. Looking at the data (see TABLE 6 from attached document), the student averages per semester across all five categories range from **86.8%** to **93.6%,** which are all well above **70%**. Even if you look at the averages within a given category by semester, the lowest average is **79.0%,** which still exceeds the **70%** threshold. Ultimately, the average across all five categories for all four semesters works out to **90.07%**. So no matter how you slice it, these students have met the standard of success for outcome 2. |

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

Based on the Polygon Final averages of each of the five categories for the departmentally-developed rubric, here are the top categories of student achievement:

- Appearance = **95.60%**
- Cleanliness = **94.75%**
- Complexity = **92.25%**

Appearance indicates that students are generating modeled surfaces that are realistically proportioned according to reference images. Cleanliness indicates that those surfaces are free from technical errors such as laminar faces, non-manifold geometry, or holes. Complexity indicates that students are stretching themselves to capture a fair amount of detail even though they are just starting to develop their 3D modeling skills.

Based on the Final Exam, questions that refer to practical modeling tools and commands common to both NURBS and polygon modeling were an area of particular strength as they averaged out to **95.63%**. Furthermore, student responses to the polygon modeling questions came out a respectable **84.88%,** indicating solid comprehension in this area.

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.

Based on the Polygon Final averages of each of the five categories for the departmentally-developed rubric, the two categories of student achievement that could be most improved would be:

- Surface Topology = **85.25%**
- Organization = **82.50%**

Organization within a 3D file is critical when working in studio context, as it makes it easier to pass a file to another artist for another phase in the production pipeline. Sometimes neglecting to follow proper naming conventions can break pipeline scripts or cause a file to crash on the render farm. Luckily, this is a relatively easy area to improve. Underscoring the motivation behind learning proper labeling and grouping habits for objects and files coupled with much stricter enforcement of this in the grading rubric, I believe, will improve this aspect.

Surface Topology, however, is not so easily improved. This really comes down to the central challenge of this course, which is to take someone with no prior experience and get them to build perfectly smoothable quad meshes. I am unsure of how to improve this area aside from possibly recommunicating that all full-time and part-time instructors that teach ANI 150 emphasize that a clean mesh should be able to be smoothed without causing issues. Development in this category simply requires continued practice.

Based on the Final Exam, there were some clear areas that are calling out for improvement. First of all, the average responses to the NURBS modeling questions came in at an unacceptable average of **67.44%**. This indicates that we need to reinforce the practical commands and tools relating to NURBS modeling much more strongly, so they have a recall rate closer to the polygon question average. Secondly, I went out of my way to construct a question set that would reflect how we were doing in polygon vs. NURBS comprehension. This needs to be more specifically identified in the formal assessment on ANI 150, as this issue could have been glossed over with an overall question average of **80.05%**. Lastly, question P2 (see attached document) on the polygon modeling subset, which scored much lower than the other polygon questions and indicates the terminology for Boolean operations such as Boolean Union in this case, needs increased instructional emphasis.

**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.

   N/A. There is no previous report available for ANI 150.

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?

Overall, ANI 150 seems to be meeting the needs of students and providing them a solid foundation to build on for the rest of the 3D Animation program. The assessment process, however, has brought to light the surprising disconnect between the ANI 150 course that exists today and the ANI 150 master syllabus and corresponding assessment plan that are on file. The ANI 150 master syllabus will be re-written to incorporate much more clearly differentiated outcomes, more precise objectives, and to ensure that there are assessment tools in place to begin to independently track the non-modeling parts of the pipeline that students are currently exposed to in the course.

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

The ANI 150 assessment results and action plan will be shared with full-time departmental faculty during a meeting during the Fall 2019 semester. The applicable changes or areas of emphasis will be communicated to part-time instructors as they are assigned sections of ANI 150 moving forward. Also, please note that the ANI 150 course changes will be implemented in the on-campus ANI 150 first (targeting Winter 2020) and then subsequently formally incorporated into the online version of ANI 150 (targeting Fall 2020).

4. Intended Change(s)

| Intended Change | Description of the change | Rationale | Implementation Date |
|---|---|---|---|
| Outcome Language | I propose replacing the current two outcomes for ANI 150 to the following three outcomes:<br>1. Choose appropriate tools and techniques to create digital 3D models using industry-standard software.<br>2. Apply 3D pipeline knowledge | The two existing outcomes were too vague, and these new outcomes more clearly reflect our goals for student achievement regarding 3D modeling, an introduction to the rest of the 3D pipeline, and relevant 3D terminology. | 2020 |

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| | and techniques including texturing, lighting, animation, and rendering at a basic level.<br>3. Demonstrate a clear understanding of 3D industry and 3D software terminology. | | |
| Assessment Tool | I propose assessing following three outcomes as follows:<br><br>**Outcome 1** (Choose appropriate tools and techniques to create digital 3D models using industry-standard software) will be assessed by responses to relevant exam questions and department review of project.<br><br>**Outcome 2** (Apply 3D pipeline knowledge and techniques including texturing, lighting, animation, and rendering at a basic level) will be assessed by responses to relevant exam questions and | Since three new outcomes were defined, the assessment tools required to measure those outcomes needed updating as well. | 2020 |

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| | department review of project.<br><br>**Outcome 3**<br>(Demonstrate a clear understanding of 3D industry and 3D software terminology) will be assessed by responses to relevant exam questions. | | |
| Objectives | I propose replacing the current seven objectives with the following nine objectives:<br><br>4. Construct 3D objects using polygon modeling tools.<br>5. Construct 3D objects using NURBS modeling tools.<br>6. Select and apply modeling tools appropriate for specific needs and situations.<br>7. Create and assign basic shaders and textures to 3D models. | These changes separate some areas that were combined and more clearly phrase and reflect the specific key areas a student should learn in ANI 150. | 2020 |

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| | 8. Apply virtual lighting to 3D models.<br>9. Control new and existing virtual cameras.<br>10. Set and adjust animated keyframes.<br>11. Set up basic render settings and launch renders.<br>12. Identify and properly use industry and software terminology. | | |
| 1st Day Handout | All areas, such as course description, assignments in the grading break down, etc., that need updating will be updated. | It is important to ensure the 1st day handout remains consistent with the master syllabus and the proposed assignment changes coming from assessment. | 2020 |
| Course Assignments | We will include an additional all-encompassing ANI 150 final project that requires students to combine NURBS modeling, polygon modeling, texturing, lighting, animation, and rendering all together. | A single all-encompassing assignment would provide a rich source of data for course assessment and give students an opportunity to see how all the pieces fit together right from their introduction to 3D. | 2020 |

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

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| 6. |

**III. Attached Files**

ANI 150 Attachment

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| **Faculty/Preparer:** | Kevin Bindschadler | **Date:** 08/15/2019 |
| **Department Chair:** | Ingrid Ankerson | **Date:** 08/21/2019 |
| **Dean:** | Eva Samulski | **Date:** 08/22/2019 |
| **Assessment Committee Chair:** | Shawn Deron | **Date:** 09/11/2019 |