**MATH 127 Precalculus II**

**Section Number(s): 1001**

**Instructor: Daniel T. Murphree**

**Academic Year: 2021-2022**

**Semester: Spring**

**# of Students: 15**

**Complete and submit your assessment report electronically to your department chair. Course and general education outcomes are counted as achieved if 62% or more of students answered the problems associated with the outcome correctly.** **As needed, please attach supporting documents and/or a narrative description of the assessment activities.**

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| **General Education Objectives** | **Class/Course Outcomes** | **Assessment Measures** | **Course Outcome Assessment Results** | **General Education Outcome Assessment Results** | **Outcome Results Analysis** |
|  | In the boxes below, summarize the outcomes assessed in your class or course during the last year*.* If this is a GenEd class, include the appropriate GenEd objectives. | In the boxes below, list the proctored assignments and which problems on those assignments you used to assess each outcome. | In the boxes below, give the percentage of students who answered the problems correctly and indicate if the course outcome was achieved. | In the boxes below, give the weighted average of the percentages of students who met course learning outcomes and indicate if the general education outcome was achieved. | In the boxes below, please reflect on this outcome’s results and summarize how you plan to use the results to improve student learning. |
| Demonstrate knowledge of mathematical notation and concepts. | **Outcome #1:**  Compute values of the six trigonometric functions and their inverses | Proctored assignment:  Chapter 7 Exam  Problem numbers:  7.2.1  7.3.27 | Results:  7.2.1: 71.43%  7.3.27: 57.14%  Average: 64.29%  Criterion Met: Yes | Average percentage: 53.02%  Criterion Met: No. | 1. Results Analysis: The general education objective was not achieved despite two of the three course level learning outcomes being met. The one not met was on expressing complex numbers in trigonometric form. I really think that the way our book from Hawkes learning presented this topic and dealt with the topic in the homework was confusing for students and didn’t accurately reflect the topic.  2. Action Plan: The math department is switching back to the book from Pearson next year and using that text I have not had students struggle with complex numbers in trigonometric form. |
| **Continued:** Demonstrate knowledge of mathematical notation and concepts. | **Outcome #2:**  Solve equations involving trigonometric functions and their inverses. | Proctored assignment:  Chapter 8 Exam  Problem numbers:  8.1.13  8.4.2 | Results:  8.1.13: 57.14%  8.4.2: 78.57%  Average: 67.86%  Criterion Met: Yes |
| **Outcome #3:**  Express complex numbers in trigonometric form and perform operations with them. | Proctored assignment:  Chapter 9 Exam  Problem numbers:  9.5.3  9.5.15 | Results:  9.5.3: 46.15%  9.5.15: 7.69%  Average: 26.92%  Criterion Met: No |
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| Apply mathematical concepts and operations in proper written or graphical format | **Outcome #4:**  Analyze and draw the graphs of the six trigonometric functions and their inverses. | Proctored assignment:  Chapter 7 Exam  Problem numbers:  7.4.6  7.5.1  7.6.11 | Results:  7.4.6: 57.14%  7.5.1: 71.43%  7.6.11: 78.57%  Average: 69.05%  Criterion Met: Yes | Average percentage: 69.05%  Criterion Met: Yes | 1. Results Analysis: These learning outcomes were met with the biggest challenge being analyzing and graphing equations representing conic sections. In that learning outcome, the students had the most difficulty with creating a formula from the graph of the conic section. This indicates that the students struggled to understand how the graph related to the numbers in the function.  2. Action Plan: I was able to learn some new “tricks” with the online graphing software Desmos this semester. I can use them to better show the students the connection between the graph and the equation by having a graph alter as I alter the equation for them to see. |
| **Outcome #5**  Analyze and draw the graphs of parametric and polar equations and convert between Cartesian and polar coordinates. | Proctored assignment:  Chapter 9 Exam  Problem numbers:  9.3.9  9.4.1 | Results:  9.3.9: 53.85%  9.4.1: 92.31%  Average: 73.08%  Criterion Met: Yes |
| **Outcome # 6**  Analyze and graph equations representing conic sections. | Proctored assignment:  Final Exam  Problem numbers:  10.1.16  10.3.1 | Results:  10.1.16: 50%  10.3.1: 75%  Average: 62.5%  Criterion Met: Yes |
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| Apply relevant mathematical skills in solving real-world problems. | **Outcome #7:**  Solve right and oblique triangles | Proctored assignment:  Chapter 9 Exam  Problem numbers:  9.1.6  9.2.2 | Results:  9.1.6: 61.54%  9.2.2: 69.23%  Average: 65.39%  Criterion Met: Yes | Average percentage: 67.31%  Criterion Met: Yes | 1. Results Analysis: I’m pretty happy with the results I see in these learning outcomes, though there is room for improvement. The students seemed to have some trouble with the law of sines, but then did well with the law of cosines, which is unusual. Similarly, they struggled more with the basics of vectors than with computing a dot product. I might have focused less on what is usually the “easy” part and did not cover them as well as I should have.  2. Action Plan: I plan to balance my approach next semester to better emphasize all aspects of these topics. |
| **Outcome #8:**  Perform operations with vectors and use vectors to solve real-world problems. | Proctored assignment:  Chapter 9 Exam  Problem numbers:  9.6.1  9.7.1 | Results:  9.6.1: 61.54%  9.7.1: 76.92%  Average: 69.23%  Criterion Met: Yes |

**Notes: In this class I had three students fail and one student withdraw for a 73% success rate. Two of the three students that failed did not show up for class and tried to complete the course by only doing the coursework. The third student could have passed but did not take the final and did not respond when I tried to ask her why. I feel like my teaching was effective in this class and that changing back to the Pearson book will improve my student’s achievement.**

I have reviewed this report:

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Department Chair Dean

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Vice President of Academic Affairs and Student Services

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