**MATH 120E Fundamentals of College Mathematics Expanded**

**Section Number(s): 1006, 1008, 1010, 1015**

**Instructor: Daniel T. Murphree**

**Academic Year: 2020-2021**

**Semester: Fall**

**# of Students: 19**

**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:**  Solve a variety of equations including polynomial, exponential, and logarithmic. | Proctored assignment: Proctored Chapter 1 Exam  Proctored Chapter 4 Exam  Proctored Final Exam  Problem numbers:  1.1.17  4.2.81  4.5.47 | Results:  1.1.17: 77.8%  4.2.81: 77.8%  4.5.47: 100%  Average: 85.2%  Criterion Met: Yes | Average percentage: 86.5%  Criterion Met: Yes | 1. Results Analysis: I’m overall very happy with the results I see here, especially with this being such a difficult semester with COVID restrictions. I actually feel that some of the restrictions may have helped my students. I normally give exams on paper in live classes, but due to restrictions I gave exams using MyMathLab instead. I feel like this helped students because they were able to take the exams in an environment that they were more practiced in so that they did not have to adapt to a new environment while showing they abilities. The students struggled to understand composition of functions leading to the only CLO that was not achieved.  2. Action Plan: For my next MATH 126 course I think I should try to spend more time on composition of functions, with more practice. I want to focus less on the domain of composition and instead focus on HOW to compose functions. |
| **Continued:** Demonstrate knowledge of mathematical notation and concepts. | **Outcome #2:**  Operate on functions, including basic mathematical operations, composition, and inversion. | Proctored assignment:  Proctored Chapter 2 Exam  Proctored Final Exam  Problem numbers:  2.8.87  2.8-12 | Results:  2.8.87: 44.4%  2.8-12: 88.9%  Average: 66.65%  Criterion Met: No |
| **Outcome #3:**  Use the properties of logarithms | Proctored assignment:  Proctored Chapter 4 Exam  Proctored Final Exam  Problem numbers:  4.3.15  4.3.79  4.3.89 | Results:  4.3.15: 100%  4.3.79: 100%  4.3.89: 100%  Note: improved from chp 4 to final  Average: 100%  Criterion Met: Yes |
| **Outcomes #4:**  Analyze functions by finding roots, turning points, and asymptotes. | Proctored assignment:  Proctored Chapter 3 Exam  Proctored Final Exam  Problem numbers:  3.3.41  3.4.8 | Results:  3.3.41: 88.9%  3.4.8: 88.9%  Average: 88.9%  Criterion Met: Yes |
| **Continued:** Demonstrate knowledge of mathematical notation and concepts. | **Outcome #5:**  Manipulate complex numbers and understand their relationship to the solutions of polynomial and rational equations. | Proctored assignment: Proctored Chapter 1 Exam  Proctored Chapter 3 Exam  Proctored Final Exam  Problem Numbers:  1.3.49  1.3.57  3.4.8 | Results:  1.3.49: 100%  1.3.57: 90.9%  3.4.8: 88.9%  Average: 93.3%  Criterion Met: Yes |
| **Outcome #6:**  Solve nonlinear inequalities. | Proctored assignment:  Proctored Final Exam  Problem Numbers:  1.8.27  1.8.53 | Results:  1.8.27: 77.8%  1.8.53: 72.7%  Average: 75.3%  Criterion Met: Yes |
| **Outcome #7:**  Solve systems of equations using various methods including elimination and determinants. | Proctored assignment:  Proctored Final Exam  Problem Numbers:  9.1.1  9.1.19  9.1.33  9.1.49  9.3.83 | Results:  9.1.1: 100%  9.1.19: 100%  9.1.33: 66.7%  9.1.49: 100%  9.3.83: 66.7%  Average: 86.7%  Criterion Met: Yes |
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| Apply mathematical concepts and operations in proper written or graphical format | **Outcome #8:**  Graph a variety of functions including logarithmic, polynomial, rational, and exponential functions. | Proctored assignment: Proctored Final Exam  Problem numbers:  2.7.73  3.5.85  4.2.47 | Results:  2.7.73: 100%  3.5.85: 88.9%  4.2.47: 55.6%  Average: 81.5%  Criterion Met: Yes | Average percentage: 91.3%  Criterion Met: Yes | 1. Results Analysis: My students grasped the concepts for graphing and notation very well. The only area of struggle was with graphing logarithmic functions (the problem from section 4.2). This achievement was reflected in my MATH 127 course in spring semester where my students did very well on the graphing sections as well.  2. Action Plan: I don’t feel there is much need for change here. The achievement in logarithmic graphing is a little low, so maybe I could put in more practice on that concept, but it is not distractingly low. I feel like the changes I have been making in instruction on graphing concepts has been working. |
| **Outcome #9:**  Identify, obtain, and graph equations of circles and parabolas. | Proctored assignment:  Proctored Chapter 2 Exam  Proctored Chapter 3 Exam  Problem Numbers:  2.2.19  2.2.29  3.1.9  3.1.11 | Results:  2.2.19: 100%  2.2.29: 90%  3.1.9: 100%  3.1.11: 100%  Average: 97.5%  Criterion Met: Yes |
| **Outcome #10:**  Demonstrate the appropriate mathematical format and notation in solving problems. | Proctored assignment:  Proctored Chapter Exams  Problem numbers:  2.6.13  3.5.53  4.1.4  9.3.7 | Results:  2.6.13: 70%  3.5.53: 100%  4.1.4: 100%  9.3.7: 100%  Average: 92.5%  Criterion Met: Yes |
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| Apply relevant mathematical skills in solving real-world problems. | **Outcome #11:**  Use mathematical functions to model real-world phenomena. | Proctored assignment: Proctored Final Exam  Problem numbers:  3.1.67  4.6.37 | Results:  3.1.67: 55.6%  4.6.37: 11.1%  Average: 33.4%  Criterion Met: No | Average percentage: 33.4%  Criterion Met: No | 1. Results Analysis: This result is very disappointing. Students always struggle with real-world problems, but 11% understanding how to handle an exponential based real-world problem is very distressing. I feel like in that chapter I focused too little on application because I spent more time on logarithmic properties.  2. Action Plan: I want to re-arrange my discussion in MATH 126 to focus more on application examples even when practicing skills. This will ground the skills in the application so the students have a chance to see where they can apply what they learn. I’m hoping that this also motivates the students by showing them why we are learning the specific skills. |

**Notes: This “live” class was taught entirely using the BlueJeans application which made it where I struggled to have students interact with each other. For students who completed the entire course, the pass rate was 81.8%. The withdrawal rate for this course was 21%, only four students withdrew from the class. I feel like I was able to connect with the students despite the distance model and this helped with the withdrawal rate.**

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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