Assessment: Course Four Column

Courses (MATH) - Math

MATH 126 MURPHREE:PreCalculus I

Course Outcomes	Assessment Measures	Results	Actions
Equations of circles and parabolas - Identify and obtain the equations of circles and parabolas. **Course Outcome Status:** Active **Next Assessment:** 2022-2023	**Exam -** Chapter 2 exam Problem # 5 & 6 Final exam Problem # 1 **Criterion:** 70% or better on problems	**Reporting Period:** 2017-2018 **Criterion Met:** Yes Chapter 2 Exam Problem # 5: 86% 6: 79% Final Exam Problem # 1: 82% 1. Results Analysis: The students were very comfortable with this topic and I was happy to see that those who came to the final retained the techniques. The final exam problem was similar to problem #6 on the chapter exam, so this actually showed improvement. (01/16/2019)	**Action:** I think this was taught well, I do not feel the need for an action plan here. (01/16/2019)
Functions, including basic mathematical operations, composition, and inversion - Operate on functions, including basic mathematical operations, composition, and inversion. **Course Outcome Status:** Active **Next Assessment:** 2022-2023	**Exam -** Chapter 2 exam Problem # 5 & 6 Final exam Problem # 1 **Criterion:** 70% or better on problems	**Reporting Period:** 2017-2018 **Criterion Met:** Yes Chapter 2 Exam Problem # 5: 86% 6: 79% Final Exam Problem # 1: 82% Results Analysis: For this outcome I was glad to see improvement between the chapter exam and the final, but I am disappointed in the percentage of students who met the criteria for problems 14 and 4. These problems were on	**Action:** I need more focus on function composition during the class discussion on combining functions. I think it might help to have more examples of composition and focus a bit less on the domain and range of composite functions which is a less important concept going forward. (01/16/2019)

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		function composition, which is a particular challenge for students. (01/16/2019)	
Nonlinear inequalities - Solve nonlinear inequalities. **Course Outcome Status:** Active **Next Assessment:** 2022-2023	**Exam -** Chapter 2 exam Problem # 2 **Criterion:** 70% or better on problems	**Reporting Period:** 2017-2018 **Criterion Met:** Yes Chapter 2 Exam Problem # 2: 79% Results Analysis: This outcome was one that students were more familiar with coming into the course (inequalities in general). I think this helped with the achievement level here. The inequality used was absolute value based and those who struggled seemed to have trouble with the concept of what exactly an absolute value is. (01/16/2019)	**Action:** I had been teaching Gaussian elimination at the end of the semester, but that has been removed from the learning outcomes so I can use some of that time to extend the discussion of absolute values at the beginning of the semester. (01/16/2019)
Manipulate complex numbers and understand their relationship - Manipulate complex numbers and understand their relationship to the solutions of polynomial and rational equations. **Course Outcome Status:** Active **Next Assessment:** 2022-2023	**Exam -** Chapter 3 exam Problem 4d Final Exam Problem 5d **Criterion:** 70% or better on problems.	**Reporting Period:** 2017-2018 **Criterion Met:** Yes Chapter 3 exam Problem # 4d: 75% Final Exam Problem # 5d: 64% Results Analysis: While the students did meet the criteria for this outcome, I am not particularly happy with the 64% achievement on the final exam. The students forgot to check for complex zeros to polynomials which is an important concept going forward. (01/16/2019)	**Action:** The chapter this is from is particularly difficult. I think it might help here if I make sure to have a review at the end of the semester that highlights finding the complex zeros. (01/16/2019)
Analyze functions by finding roots, turning points, and asymptotes - Analyze functions by finding roots, turning points, and asymptotes. **Course Outcome Status:** Active **Next Assessment:** 2022-2023	**Exam -** Chapter 3 exam Problems 2, 4, 5, & 6 Final exam Problems 5 & 6 **Criterion:** 70% or better on problems.	**Reporting Period:** 2017-2018 **Criterion Met:** No Chapter 3 Exam Problem # 2: 50% 4: 75% 5: 50% 6: 42% Results Analysis: While the students did improve on this topic, they struggled quite a bit the first time through	**Action:** The students seemed to get most of the steps of finding zeros of polynomials but did not seem to be able to translate that into finding asymptotes for rational functions. I think I could combine these two topics a bit more and introduce finding asymptotes as an example with finding polynomial zeros. (01/16/2019)

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		enough that I do not feel that they met the criteria for achievement. The concept being missed here is factoring polynomials and graphing rational functions. (01/16/2019)	
Graph a variety of functions including logarithmic, polynomial, rational, and exponential functions - Graph a variety of functions including logarithmic, polynomial, rational, and exponential functions. **Course Outcome Status:** Active **Next Assessment:** 2022-2023	**Exam -** Chapter 3 exam problem 3 Chapter 4 exam problems 5, 6, & 9 Fianl Exam Problem 8	**Reporting Period:** 2017-2018 **Criterion Met:** Yes Chapter 3 Problem # 3: 50% Chapter 4 Problem # 5: 91% 6: 82% 9: 55% Final Exam Problem # 8: 82% Results Analysis: I was very impressed with how well these students grasped graphing concepts and retained the techniques of graph transformations to the final. Almost all of the students were able to correctly use graph transformations on the final exam. (01/16/2019)	**Action:** Action Plan: I do not think I need to make adjustments here. This topic comes up in almost every chapter in this class and the students improved as they were exposed repeatedly. (01/16/2019)
Solve a variety of equations including polynomial, exponential and logarithmic - Solve a variety of equations including polynomial, exponential and logarithmic. **Course Outcome Status:** Active **Next Assessment:** 2022-2023	**Exam -** Chapter 4 exam Problems 13, 14, 15, & 16 Final exam problems 10, & 11 **Criterion:** 70% or better on problems.	**Reporting Period:** 2017-2018 **Criterion Met:** Yes Chapter 3 Problem # 3: 50% Chapter 4 Problem # 5: 91% 6: 82% 9: 55% Final Exam Problem # 8: 82% Results Analysis: I was very impressed with how well these students grasped graphing concepts and retained the techniques of graph transformations to the final. Almost all	**Action:** I generally teach logarithmic and exponential equations together to compare methods, but this suggests to me that I should separate the two to give logarithmic equations more focus. (01/16/2019)

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		of the students were able to correctly use graph transformations on the final exam. (01/16/2019)	
Properties of logarithms - Use the properties of logarithms. **Course Outcome Status:** Active **Next Assessment:** 2022-2023	**Exam -** Chapter 4 exam Problems 10 & 11 Final exam Problem 9 **Criterion:** 70% or better on problems.	**Reporting Period:** 2017-2018 **Criterion Met:** Yes Chapter 4 Problem # 10: 55% 11: 73% Final exam Problem # 9: 73% Results Analysis: These problems used the properties of logarithms in isolation. Problem 10 on chapter 4 was about using the properties to expand a logarithm while 11 and the final exam problem were about condensing. I think the students did better at condensing the logarithm because the concept is used in solving logarithmic equations whereas expanding logarithms is not really used until calculus. (01/16/2019)	**Action:** I think if I put more expansion problems on the homework for the section on logarithmic properties so they have more practice with these it will help. I can remove some of the problems about condensing logarithms since students get more practice with that in the other section. (01/16/2019)
Systems of equations using various methods including elimination, matrices, and determinants - Solve systems of equations using various methods including elimination, matrices, and determinants. **Course Outcome Status:** Active **Next Assessment:** 2022-2023	**Exam -** Chapter 9 exam Problems 1, 2, 4, 5, 6, 9, & 10. Final exam Problems 12, 13, & 15 **Criterion:** 70% or better on problems	**Reporting Period:** 2017-2018 **Criterion Met:** Yes Chapter 9 Problem # 1: 100% 2: 100% 4: 91% 5: 91% 6: 82% 9: 55% 10: 45% Final Exam Problem # 12: 100% 13: 64% 15: 64% Results Analysis: I am very satisfied with these results. The students tend to do well on this topic. It seems like they	**Action:** I do not think there needs to be a change here. The students clearly grasped these concepts. (01/16/2019)

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		remember many of the techniques from previous classes. Problems number 9 and 10 on the chapter 9 exam were a struggle. These were on solving non-linear systems. However, problem 15 on the final was similar to problem 10 and student achievement improved greatly there. (01/16/2019)	
Partial Fraction Decomposition of a rational expression - Find the Partial Fraction Decomposition of a rational expression. **Course Outcome Status:** Active **Next Assessment:** 2022-2023	**Exam -** Chapter 9 exam Problem 8 Final exam Problem 14 **Criterion:** 70% or better on problems	**Reporting Period:** 2017-2018 **Criterion Met:** Yes Chapter 9 Problem # 8: 82% Final exam Problem # 14: 64% Results Analysis: While there was OK student achievement here, I noticed that the students actually did worse on the final than with the chapter exam problem. Since there was not much time between the chapter exam and the final, I am unsure why this happened. (01/16/2019)	**Action:** I think it will help to emphasis the importance of this concept when reviewing for the final. In the spring semester I discussed with the class where this topic is used in calculus and I am interested to see if it made a difference with the success level. (01/16/2019)
Demonstrate the appropriate mathematical format and notation in solving problems - Demonstrate the appropriate mathematical format and notation in solving problems. **Course Outcome Status:** Active **Next Assessment:** 2022-2023	**Exam -** Chapter 2 exam problem 14 Chapter 3 exam problem 4 Chapter 4 exam problem 4 Chapter 9 exam problem 7 Final exam problems 4, 5, 7, & 13 **Criterion:** 70% or better on problems.	**Reporting Period:** 2017-2018 **Criterion Met:** Yes Chp 2 Prob # 14: 36% Chp 3 Prob # 4: 75% Chp 4 Prob # 4: 73% Chp 9 Prob # 7: 64% Final Prob # 4: 55% 5: 82% 7: 91%	**Action:** I think both of these topics just need a bit more time and directed focus. As mentioned above, I can spend some extra time on absolute values and I can deemphasize the domain part of function composition to focus more on proper usage. (01/16/2019) **Follow-Up:** I had 35% of the students who started this course drop or withdraw, which is a large concern to me. However, the ones that did stay in the course did well with 69% passing. The best results were from my students in Ely. There could be two reasons for that. One is that they were in the "live" class,

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13: 64%

1. Results Analysis: This is our most general learning outcome in the mathematics department, but really one of the most important. In general I am happy with the results here. The problem from the chapter 2 exam was on absolute value inequalities. As mentioned above, I think students achieved poorly there because they didn't fully understand the definition of the absolute value function. The problem students struggled with on the final (#4) was on composition of functions and was also a problem mentioned earlier. (01/16/2019)

which might be easier for students. The other was that my Ely students were mostly high school students working on dual credit. At this high school they only allow the top percentages of students to take dual credit and also high school students tend to have less distractions than your normal community college student. I can't do much about my Ely students being in high school, but I do want to work on retention here. I want to try to be more interactive with my IAV students so they feel like more of a part of the class. In the spring semester, I tried to do this by having all of my courses keep an open microphone. I am interested to see if this has helped. (01/16/2019)