Assessment: Course Four Column

Courses (MATH) - Math

MATH 182:Calculus II

Course Outcomes	*Assessment Measures*	*Results*	*Actions*
Integrals involving logarithmic, exponential, and trigonometric functions - Evaluate Integrals involving logarithmic, exponential, and trigonometric functions. **Course Outcome Status:** Active **Next Assessment:** 2023-2024	**Exam -** Module 1 Exam Problem 3 Final Exam Problem 1 **Criterion:** 70% or better on problems.	**Reporting Period:** 2018-2019 **Criterion Met:** Yes Module 1 Exam Problem # 3: 67% Final Exam Problem # 1: 73% Results Analysis: I'm quite happy with the student achievement level on this learning outcome. This outcome involves quite a bit of complicated work and even the majority of those that did not meet the 70% mark for these problems did well on the problem (which consisted of 6 individual problems). I am pleased to see the students did even better with this topic on the final. I think the basic integration review that I start the class with helps with this outcome. (09/17/2019)	**Action:** I do not think I need to change anything for this outcome. (09/17/2019)
Integrals, including integration by parts, partial fraction decomposition, and trigonometric substitution - Use various techniques to evaluate integrals, including integration by parts, partial fraction decomposition, and trigonometric substitution. **Course Outcome Status:** Active **Next Assessment:** 2023-2024	**Exam -** Module 1 Exam Problem 3 Final Exam Problem 1 **Criterion:** 70% or better on problems.	**Reporting Period:** 2018-2019 **Criterion Met:** Yes Module 1 Exam Problem # 3: 67% Final exam Problem # 1: 73%	**Action:** I do not think I need to change anything for this outcome. (09/17/2019)

Course Outcomes	Assessment Measures	Results	Actions
		Results Analysis: I used the same problems to evaluate this outcome because the problems require the students to decide the best method for each integration. Again, the students performed well on this outcome and improved over the semester as they had to use these techniques to evaluate integrals in other concepts. (09/17/2019)	
First-order linear differential equations - Solve first-order linear differential equations. **Course Outcome Status:** Active **Next Assessment:** 2023-2024	**Exam -** Module 1 Exam Problems 4 & 5 **Criterion:** 70% or better on problems.	**Reporting Period:** 2018-2019 **Criterion Met:** Yes Module 1 Exam Problem # 4: 33% 5: 80% Results Analysis: Problem 4 was a separable differential equation while problem 5 was a linear differential equation. Generally separable equations are considered "easier" and this was a basic integration but the students kept forgetting the separation step and instead tried to integrate with the equation exactly as given. I feel like the students spent more time studying the method to handle linear differential equations because it was more complicated and reinforced on the Show work quizzes. (09/17/2019)	**Action:** I will add extra separable differential equations to the Show Work quiz for that section and also replace some regular integration homework problems with some that involve a differential equation before integration so that the students get more practice with that topic. (09/17/2019)
Convergence of infinite sequences and series - Determine the convergence of infinite sequences and series. **Course Outcome Status:** Active **Next Assessment:** 2023-2024	**Exam -** Module 2 Exam Problems 1 & 4 Final Exam Problem 2 **Criterion:** 70% or better on problems.	**Reporting Period:** 2018-2019 **Criterion Met:** No Module 2 Exam Problem # 1: 40% 4: 80% Final Exam Problem # 2: 53% Results Analysis: Problem 1 on the module 2 exam was about convergence of just a sequence while problem 4 on that exam and problem 2 on the final dealt with convergence of various types of series. I'm very unhappy with this result since convergence of a sequence is a fairly simple question to answer and series convergence is the main point of this course. With problem 1, many of the	**Action:** The last time I taught this course, I had a student contacting me frequently who was clearly confused on these topics and when, how, and why to use each test. For that class I composed an email that broke these all down (this is also done in the textbook, but I thought it might be good to have it from another point of view). That class did better than this one with the sequence problems. As the chapter draws to a close next time I teach this course I will make sure to compose a similar email

Course Outcomes	Assessment Measures	Results	Actions
		students tried to use series tests to determine the convergence of the sequence instead of simply taking a limit. With problems 4 and 2 students struggled to determine which test to use to determine the convergence of the series and were frequently unsure what they had actually shown once they did test the series. (09/17/2019)	and also add in some discussion about the difference between a sequence and a series to help students better understand. (09/17/2019)
Represent functions as power series - Represent functions as power series. **Course Outcome Status:** Active **Next Assessment:** 2023-2024	**Exam -** Module 2 Exam Problem 5 & 6a **Criterion:** 70% or better on problems.	**Reporting Period:** 2018-2019 **Criterion Met:** No Module 2 Exam Problem # 5: 60% 6a: 73% Results Analysis: Problem 5 was about finding the convergence interval of a power series and problem 6a was about creating a Taylor series for a function. I only used part a of problem 6 because I found that I did not have a homework problem covering the rest of the problem (using the remainder of the Taylor series to find the convergence interval). MyMathLab no longer has homework problems on that topic in the section where it was covered! I am not sure why, but I will have to leave that topic off next year for sure. (09/17/2019)	**Action:** I will be leaving off 6b and 6c next time I teach this course. I am already planning to make videos for this course, I think that will help with this section. Seeing many examples of how to create and determine the convergence of a power series should help students understand these complicated topics better. (09/17/2019)
Find the area contained in, the length of, and the derivatives of parametric curves - Find the area contained in, the length of, and the derivatives of parametric curves. **Course Outcome Status:** Active **Next Assessment:** 2023-2024	**Exam -** Module 3 Exam Problem 1b **Criterion:** 70% or better on problems.	**Reporting Period:** 2018-2019 **Criterion Met:** No Module 3 Exam Problem # 1b: 53% Results Analysis: I'm a bit surprised by this outcome as this is again not a particularly difficult topic. The problem used to evaluate this outcome was specifically about determining the length of a parametric curve over an interval. The most general mistake students made while finding the length was to try and use the rectangular length integral instead of the (actually easier) parametric one. Since the equations used did not easily make a rectangular equation the students struggled with what to do next.	**Action:** Similar to with the sequence and series convergence issues, I think that the main thing students need here is and explanation of the topic from another viewpoint. Making my own video for the topic will help, but I think I could also compose an email stressing how to work with the parametric equations without having to go through rectangular form. (09/17/2019)

Course Outcomes	Assessment Measures	Results	Actions
		(09/17/2019)	
Find area and length in polar coordinates - Find area and length in polar coordinates. **Course Outcome Status:** Active **Next Assessment:** 2023-2024	**Exam -** Module 3 Exam Problems 2 & 3 Final Exam Problem 5 **Criterion:** 70% or better on problems.	**Reporting Period:** 2018-2019 **Criterion Met:** Yes Module 3 Exam Problem # 2: 73% 3: 73% Final Exam Problem # 5: 93% Results Analysis: The students did an excellent job with this outcome. They were able to sketch a polar curve and find its tangent at a point, and even improved for the final (which means the feedback on the module 3 exam helped them!). They were able to find the area between two polar curves fairly well. The main mistake I saw there was with students not getting the entire area (wrong limits of integration). (09/17/2019)	**Action:** While the students did do well with these problems, I wish I had put some more problems for this outcome on the exam, specifically about length using polar coordinates. Next time I teach this course I think I might not cover converting conic sections into polar coordinates (which is not a course outcome) and instead focus more on polar calculus. This would also give me more time in the class so the students would not have to have their third module exam quite so close to their final exam. (09/17/2019) **Follow-Up:** This class started with 18 students and had 3 withdraw with a “W”. Most of the remaining students took my calculus I course in the fall, none of the students who took calculus I with me last fall withdrew from this course. Analyzing this course makes me feel I am doing something correct in calculus I, especially with the students doing well in the first sections on integration. My main focus with this course going forward will be to get more viewpoints for the students. I will be going my own lecture-capture videos for this course and providing those to students as well. (09/17/2019)