

Course Outcomes Guide (COG)

Course Title: MAT 161 - Precalculus

Date: May 2013

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Expected Learning Outcomes

GENERAL EDUCATION

Upon successful completion of this course, a student should be able to:

1. Apply mathematical methods involving arithmetic, algebra, geometry, and graphs to solve problems.
2. Represent mathematical information and communicate mathematical reasoning symbolically and verbally.
3. Interpret and analyze numerical data, mathematical concepts, and identify patterns to formulate and validate reasoning.

COURSE LEARNING OUTCOMES:

Upon successful completion of this course, a student should be able to:

1. Understand the relationship between an equation and its graph.
2. Develop an improved understanding of exponential, logarithmic, and trigonometric functions.
3. Demonstrate the ability to use identities to simplify or rewrite an expression.
4. Solve application problems involving polynomial, exponential, logarithmic and trigonometric functions and systems of equations.
5. Effectively work in a group setting to solve problems.
6. Use technology (graphing calculators, scientific calculator, etc.) to assist in the problem solving process.
7. Use proper terminology to communicate results or to describe how the results were obtained.

Assessment

- The tool used through Spring 2013 was a handful of problems chosen to assess learning outcomes 1, 2, 3 and 7. This was a tool made by faculty was thus had no outside validation.
- A new tool is being developed for Fall 2013. The new tool will assess outcomes 1, 2, 3, 4, 6, and 7. It will be made of problems from various sources that provide data that can be used as a benchmark.

Validation

- For our legacy data, we used a homemade assessment tool, so we have no way to validate the data.
- With the assessment starting in Fall 2013, we will be changing the questions that we use. All of our new questions will come from sources with national data available such as

retired Praxis, AP Calculus, GRE subject, and SAT subject tests. This will allow us to benchmark our students' results against a national average.

Follow-up

- The main area for improvement is on outcome 3. The results on the question involving a trigonometric identity were much lower than those of other questions. The results on this question have not changed much over the life of the assessment tool, despite changes in classroom techniques in at least one of the two sections. This seems like a good place to add in a couple of activities in the Learning Support Center. This would give students time on task outside the classroom to reinforce the material they cover inside the classroom.

Budget Justification

- We are attempting to run an online section of this course. There may be some costs associated with getting the appropriate tools needed to communicate mathematics effectively in an online environment. These tools include access to a virtual whiteboard for office hours.

Results

[illegible]

*% Walk-away Fs = Did not take the final exam and received a grade of F.

** Only contains results for n = 18 students as the assessments for the other section of the course were accidentally misplaced during a move.