

Course Outcomes Guide (COG)

Course Title: MAT 114 – Applied Algebra

Date: September 2017

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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, students will:

1. Develop improved arithmetic skills.
2. Develop improved algebraic skills.
3. Use algebra to solve application problems.
4. Develop mathematical models for real-world data and problems.
5. Solve problems by working constructively in a group setting.
6. Use technology as a tool in the problem-solving process.
7. Use proper terminology and units to communicate results.

Assessment

- Outcomes 1 and 2 were assessed using a pre-post test up through 16/SP.
- Outcomes 1, 2, 3, 4, 6, and 7 are assessed using a common portion of the final exam.

Validation

- Sources such as problems from retired Praxis and SAT Math Subject tests were chosen to assess outcomes 1, 2, 3, 4, 6, and 7 and this tool was implemented in Fall 2013. While the sources for these questions have a different target audience than MAT 114, the material does overlap with the content of MAT 114. As expected, our scores are lower than the benchmark, as the benchmark questions were mostly SAT Math Subject test questions and the audience there is notably different.

Results

- As suspected with this population of students, the results indicate that they have difficulty when pure algebra problems are put in front of them. The question with the lowest average score almost every semester is one about adding fractions that have letters in them.
- While the scores on the multiple choice algebra questions show this to be their weakest area, the pre/post-test scores tell another story. The pre/post-test looks at more basic skills and shows those skills have improved through the course, averaging a 14% increase in score on the test from the beginning to the end of the semester. Although they still have trouble with algebra, they have made improvements.

Follow-up

- During 16/FA the class was run mostly as a flipped classroom. This was continued for 17/FA as well as returning to a book with MyMathLab access. Having access to MyMathLab gives students more support when they cannot be on campus and more opportunity to practice algebra skills.
- I will resume the pre/post test model to see how student preparedness changes over time and how well the class improves basic skills in arithmetic and algebra.

Budget Justification

- No funds requested.

SLOA Data

	14/FA	15/SP	15/FA	16/SP	16/FA
# Active students	19	16	22	10	22
%W	5.3	0	9.1	10	0
*% walk-away Fs No final exam/grade = F	0	12.5	0	10	4.5
% Success (A,B,C)	94.7	87.5	90.9	70	95.5
General Education SLOA	4.94	5.50	6.00	4.60	5.30
Mean Pre-test Score (out of 17)	9.82	11.58	10.90	10.63	NA
Mean Post-test Score (out of 17)	13.17	13.69	12.70	13.00	NA
Mean Course Assessment Score (out of 10)	6.06	7.08	6.74	6.88	6.65
Benchmark Course Assessment Score	8.09	8.09	8.09	8.09	8.09
Mean course grade	3.11	2.81	3.60	2.89	3.27
Item Analysis Weakest Content Areas	SLO 1	SLO 1	SLO 1	SLO 1	SLO 1