

## Course Outcomes Guide (COG)

**Directions:** Please complete this form to document your progress toward improving student learning. For each item, indicate your progress and your anticipated next steps. Thank you!

**Course Title:** MAT 103 Finite Mathematics

**Date:** September 2015

**Course Team:** Paula Kessler Lead Faculty

### Expected Learning Outcomes

#### STUDENT LEARNING OUTCOMES:

**Upon successful completion of this course students will be able to:**

1. Use computational techniques and algebraic skills essential for success in an academic, personal, or workplace setting. (Computational and Algebraic Skills)
2. Use visualization, special reasoning, as well as geometric properties and strategies to model and solve problems. (Geometric Skills)
3. Collect, organize, and display data as well as use appropriate statistical methods to analyze data and make inferences and predictions. (Statistical Skills)
4. Critically analyze and construct mathematical arguments. (Proof and Reasoning)
5. Use technology, where appropriate, to enhance and facilitate mathematical understanding, as well as an aid in solving problems and presenting solutions. (Technological Skills)
6. Communicate and Understand mathematical statements, ideas and results, both verbally and in writing, with the correct use of mathematical definitions, terminology and symbolism. (Communication Skills)
7. Work collaboratively with peers and instructors to acquire mathematical understanding and to formulate and solve problems and present solutions. (Collaborative Skills)

#### COURSE CONTENT OBJECTIVES:

Numbers listed in trailing parentheses reference Mathematics Program Outcomes/Student Learning Outcomes. Outcome # 7 promotes student success and empowers professional growth of HCC graduates; therefore it is incorporated and emphasized throughout this course.

**Upon successful completion of this course students will be able to:**

1. calculate the slope of a line, derive the equation of a line given a point on the line and the slope, and graph a linear equation

2. construct a linear mathematical model for a given real life application, and interpret the meaning of the slope and y-intercept
3. perform operations with matrices, and solve systems of equations using matrices  
solve systems of equations using Cramer's Rule
4. graph the solution set for two or more linear inequalities in two unknowns
5. construct the constraints and the objective function for a linear programming problem from everyday life, solve using the graphical method, and interpret the solution
6. count the number of possible outcomes for a given application using the fundamental principle of counting, permutations, and combinations
7. apply the definitions of dependant and independent events, mutually exclusive events, sample space, and probability to solving real world problems involving chance
8. construct mathematical models for real world problems in finance that involve compound interest, annuities, and amortization, solve problems using the model, and interpret the solution.
9. use the simplex method to solve maximum and minimum linear programming problems from everyday life involving two or more variables, and interpret the solution.

### **Assessment**

This course ran for the first time in Spring 2011. The class ended with 6 students completing the course. The class was required to complete homework, quizzes, tests as well as a project dealing with purchasing a used car and what option would be the best option given different conditions. Fall 2013 and Spring 2014 this class ran as an online class. All students are completing homework, quizzes and tests on My Math Lab. Students are required to go to the Center for Academic Excellence (Testing Center) to complete all tests. Students are also given the General Education Assessment (8 questions).

### **Validation**

The course has only ran one time as a lecture. Each time since then the class has been canceled due to low enrollment. We have given the class to several students as a tutorial each semester because on 4 year institution in the area does require it for their math class. If we ever have the opportunity to offer the class as a full section again we will plan to use common questions throughout the course that were used during the first implementation.

For Spring 2013 we changed the book to hopefully allow the class to be offered as a web course. We hope this may draw in a few more students and in turn allow us to start to do more data comparisons. For spring 2013 we only had one student as a tutorial. The course is being offered in Fall 2013 as a web course.

In Fall 2013 and Spring 2014 the course was offered as an online course. Each semester we only had a total of 6 students complete the course.

**Results**

No know results as of now because of times offered and class sizes. We have had to cancel this class in Spring 2012 and Fall 2012 due to low enrollments. We have offered it as a tutorial for a few students in need of the course for transfer.

Fall 2013 and Spring 2014 only had 6 students each semester.

Fall 2014 and Spring 2015 the class was offered as an online class. Total student for both semesters was only 18.

**Follow-up** (How have you used or how will you use the data to improve student learning?)

With the new NSF grant we will be adding more critical thinking questions for Fall 2016.

**Budget Justification** (What resources are necessary to improve student learning?)

**Course: MAT 103**

**SLOA Data**

**Faculty Team: P. Kessler**

	SU 2010	FA 2010	SP 2011	FA 2011	SP 2012	FA 2012	SP 2013	FA 2013	SP 2014	FA 2014	SP 2015
# Active students			9	8	2		1	6	6	8	10
# Withdrawal									1		2
% Withdrawal			0	0	0		0	0	16.7	0	20
*% walk-away Fs No final exam/grade = F			22.2	0	50		0	0	0	12.5	0
% Success (A,B,C)			77.8	100	50		100	100	83.3	75	70
% General Education SLOA								80%	90.6%	73.3	71.9
Common SLOA Score								21.8	20.25	21.14	20.75
Mean course grade			2.44	3.13	2.00			4.0	2.6	2.38	2.75

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

**Content Areas**

**Common SLOA Score is out of 25 points**

**% Gen Ed SLOA Average correct/8**