

## Course Outcomes Guide (COG)

**Course Title:** MAT 102, Trigonometry

**Date:** Spring 2017

**Course Team:** Christopher J. Lewis

### Expected Learning Outcomes

#### STUDENT LEARNING OUTCOMES:

##### Course outcomes:

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

1. Use computational techniques and algebraic skills essential for the study of exponential and trigonometric functions, as well as their inverses.. (Computational and Algebraic Skills)
2. Use visualization, spatial reasoning, as well as geometric properties and strategies to model and solve problems involving exponential and trigonometric functions, as well as their inverses.. (Geometric Skills)
3. Critically analyze and construct mathematical arguments. (Proof and Reasoning)
4. Use technology, where appropriate, to enhance and facilitate mathematical understanding, as well as an aid in solving problems and presenting solutions. (Technological Skills)
5. 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)

##### General Studies Outcomes:

Upon successful completion of this course students will 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 CONTENT OBJECTIVES:

In this course students will acquire:

1. An understanding of exponential, logarithmic, trigonometric and inverse trigonometric functions, as well as their applications and their graphs.
2. The ability to use inverse functions to solve equations, specifically to solve exponential and trigonometric equations.
3. An understanding of angle measure in degrees and radians, of the unit circle as it relates to the trigonometric functions, and of right triangle trigonometry.
4. Knowledge of trigonometric identities and experience deriving identities.

5. An understanding of polar coordinates, equations and graphs, the complex plane and DeMoivre's Theorem.

**Assessment (How do or will students demonstrate achievement of each outcome? Please attach a copy of your assessment electronically.)**

The grade is based on Homework, 20%, the 2 lowest homework scores are dropped; Quizzes, 15%, the 2 lowest quizzes are dropped; Five Chapter Exams, 48%; and the Final Exam, 17%.

- A = 90% - 100%
- B = 80% - 89%
- C = 70% - 79%
- D = 60% - 69%
- F = 0% - 59%

The homework is completed online. There is a 5% per day reduction in the grade for homework problems completed after the due date.

The quizzes are completed online. There are up to 3 attempts on each quiz. Only the highest score counts. The final attempt must be completed by the due date.

The exams are taken in the LRC Test Center on the third floor. There is only one attempt on the exams and they must be completed by the due date.

All coursework and assessments are delivered and completed through the MyMathLab software. In addition, all students complete the math department 8 question General Education Assessment.

**Validation (What methods have you used or will you use to validate your assessment?)**

A rubric is used to grade the 5 question common assessment. Comparisons to the benchmark standard of 70% are then made for each question. Each question is linked, in direct correlation by number, to each of the 5 student learning outcomes.

**Results (What do your assessment data show? If you have not yet assessed student achievement of your learning outcomes, when is assessment planned?)**

<b>Spring 2017</b>					
<b>Student Learning Outcome</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Mean Score</b>	<b>33%</b>	<b>17%</b>	<b>100%</b>	<b>67%</b>	<b>41%</b>

The 5 students completing the class took the 5 question common assessment with mean scores provided in the table above. The scores were below average, with the exception of outcome 3, where the score was superior. The scores indicate that this small class of five students was clearly below average, a result consistent with the grades earned as two students failed the course and one student earned a D.

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

Past results indicate that the modifications that were made to make MAT 102 compatible with the prerequisite of MAT 101 were successful. The use of the same text and software for both courses helped students achieve the learning outcomes. It should be noted that this was a relatively small class with 3 of the 5 students below average. The other 2 students earned grades of B. Results indicate that the 3 below average students lacked either time or motivation to succeed. This is not atypical of students in online classes.

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

MAT 102 students use the Student Learning Center (SLC). It would be advisable to have a SLC budget to insure that there is a math instructional assistant during all hours the SLC is open.

**Course: MAT 102**

**SLOA Data**

**Faculty Team**

	FA 201 0	SP 201 1	SU 201 1	FA 201 1	SP 201 2	SU 201 2	FA 201 2	SP 201 3	SP 201 4	SP 201 5	FA 201 5	SP 2016
# Active students	29	21	13	22	17	17	30	13	4	5	8	6
%W	6.9	19	7.7	18.2	5.9	0	6.7	15.4	25	20	12.5 n=1	16.7 n=1
*% walk-away Fs No final exam/grade = F	6.9	14.3	0	9	5.9	11.8	10	0	0	0	12.5 n=1	0
% Success (A,B,C)	68	52.4	76.9	59.1	58.8	76.5	71.4	54.5	25	80	75.0	83.3
Common Comprehensive Final Exam Score				76	77.5		81	88.3	74.2	86.4	75.7	88.6
Mean course grade	2.3	2.18	2.75	2.28	1.75				1.00	3.00	2.71	3.60
Item Analysis <b>Weakest Content Areas</b>				SLO 4	SLO 4		SLO 4	SLO 4	SLO 4	SLO 4	SLO 1, 2	none

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

Course: MAT 102

SLOA Data

Faculty Team

	FA 2016	SP 2017										
# Active students	4	5										
%W	0	0										
*% walk-away Fs No final exam/grade = F	0	40										
% Success (A,B,C)	100	40										
Common Comprehensive Final Exam Score	93.1	74.8										
Mean course grade	4.0	1.4										
Item Analysis <b>Weakest Content Areas</b>	none	SLO 1,2,4,5										

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