Course Outcomes Guide (COG)

Course Title: MAT 208, Linear Algebra **Date: Fall 2018**

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 systems of linear equations, matrix algebra, vector spaces, eigenvalues and eigenvectors, orthogonality and diagonalization. (Computational and Algebraic Skills).
2) Use visualization, spatial reasoning, as well as geometric properties and strategies to model, solve problems, and view solutions, especially in R^2 and R^3, as well as conceptually extend these results to higher dimensions. (Geometric Skills).
3) Collect, organize, and display data as well as use appropriate statistical methods to analyze data and make inferences and predictions.
4) Critically analyze and construct mathematical arguments that relate to the study of introductory linear algebra. (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).

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

Students demonstrate achievement of the learning outcomes by scores on common assessment problems administered to students in the HCC Linear Algebra course, Math 208, and the comparable Hood College Linear Algebra course, Math 339. The common assessment is attached.
Hood College was selected because it is a four year institution in close proximity to HCC offering an excellent undergraduate degree in mathematics. HCC math majors do transfer to Hood to complete their B.S. degree in math.

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

The assessment is validated by using a common assessment rubric for HCC and Hood College linear algebra students. The rubric was developed by Professor Ann Stewart of Hood College. Both the assessment instrument and the rubric are attached to the COG version on my documents. For security the rubric and assessment are not attached to the y-drive COG.

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

Assessment Question	1	2	3	4	5	6
Learning Outcome	4, 6	2, 4, 6	2, 6	1, 6	2, 4	3, 5, 7
HCC Mean	9.38	7.50	9.88	14.0	4.38*	15.00*
Hood Mean	9.69	9.13	10.06	15.63	4.9*	10.5*
HCC Mean Minus Hood Mean	-0.31	-1.63	-0.18	-1.63	-0.52*	+4.50*

*Question 5 and 6 were not common questions. They were only administered to HCC students using a 70% standard to arrive at the 4.9 and 10.5 standard mean score.

Traditionally, the HCC student's scores are comparable if not better than the Hood College student scores, which serve as a benchmark. This would have also been the case for this small class of 8 students, if the scores of the single student, who did not apply himself and consequently failed the class, are omitted. With this taken into consideration, it can be concluded that overall the class achieved all learning outcomes.

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

Continue with current methods of instruction.

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

None at this time.

Course: MAT 208 **SLOA Data**

Faculty Team

	FA 2010	FA 2011	SP 2012	FA 2012	FA 2013	FA 2014	FA 2015	FA 2016	FA 2017	FA 2018	FA 2019
# Active students	11	13	1	20	10	12	11	5	5	8	
%W	18.2	7.7	0	0	10 n=1	0	9.1	0	40	0	
*% walk-away Fs No final exam/grade = F	18.2	0	0	20	10 n=1	0	18.2	0	0	0	
% Success (A,B,C)	54.5	75	100	75	80 n=8	91.7 n=11	54.5	100	100	87.5	
Common Comprehensive Final Exam Score	69.2	66.8	87	75.8	84.8	83.5	73.9	88.5	75	78.3	
Mean course grade	2.0	2.55	4.0		3.00	3.09	3.00	3.4	3.0	2.5	
Item Analysis **Weakest Content Areas**	SLO 3	SLO 3		SLO 3	SLO 3	none	SLO 1, 6	SLO 2,6	none	SLO 1,6	

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