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Course Outcomes Guide (COG)

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Course Title: **MAT109 (3 Credits) INRO TO STATS**

Date: **6/25/14**

Course Team: <u>**Tom Crawford**</u>**, Joseph Mason, Richard Campbell**

STUDENT LEARNING OUTCOMES:
  General Education/Program/Course Outcomes:
    Upon successful completion of this course, students will learn how to:
      G1. Apply mathematical methods involving arithmetic, algebra, geometry, and graphs to solve problems.
      G2. Represent mathematical information and communicate mathematical reasoning symbolically and verbally.
      G3. Interpret and analyze numerical data, mathematical concepts, and identify patterns to formulate and validate reasoning.
      P/C1. Use computational techniques and algebraic skills essential for success in an academic, personal, or workplace setting. (Computational and Algebraic Skills)
      P/C2. Use visualization, special reasoning, as well as geometric properties and strategies to model and solve problems. (Geometric Skills)
      P/C3. Collect, organize, and display data as well as use appropriate statistical methods to analyze data and make inferences and predictions. (Statistical Skills)
      P/C4. Critically analyze and construct mathematical arguments. (Proof and Reasoning)
      P/C5. Use technology, where appropriate, to enhance and facilitate mathematical understanding, as well as an aid in solving problems and presenting solutions. (Technological Skills)
      P/C6. 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)
      P/C7. Work collaboratively with peers and instructors to acquire mathematical understanding and to formulate and solve problems and present solutions. (Collaborative Skills)

Assessment:
  1. A common assessment is delivered to all students across all sections and delivery modes. This common tool was first used at the conclusion of the Fall 2012 semester.
  2. The assessment consists of 19 MC questions selected from AP Stats and Praxis Exams.
  3. The assessment is delivered in the classroom or Academic Testing Center at the conclusion of the course.

Validation:
1. All previous and currently available assessment data has been entered into the "Mathy" database.
2. Common assessment results are evaluated only after final course grades have been assigned by the instructor.
3. Correlation between overall score on common assessment and the assigned course grade will be evaluated each semester.
4. Correlation between overall score on common assessment and the final exam score will be evaluated each semester.
5. Assessment question results that differ dramatically from HCC historical values will establish content areas in need of corrective action and those where previous efforts to affect improvement have been successful.
6. Assessment results that differ dramatically from nationally normed exam results will establish content areas in need of corrective action and those where ongoing methods/procedures are successful.

Results:
1. Correlation between SLOA results and student letter grades is not readily apparent (n=555 and r=.35)
2. Correlation between SLOA results and final exam score is not readily apparent (n=306 and r=.35)
3. There were no SLOA items dramatically higher than HCC historical values. Student success on item 12 (Central Limit Theorem) appears to have declined since SU13.
4. HCC results from the last 5 semesters have been compared to national results for the first time. While there appears to be numerous areas for improvement, HCC students seem to outperform the national results on item #5 (t-test degrees of freedom). Item #13 (implication from distribution shape) seems to be an area of significant shortfall as compared to national numbers.

Follow-up:
1. Course average will be substituted for letter grades in an effort to more effectively differentiate student performance and allow for better evaluation of correlation.
2. Final Exam items and SLOA items will be reevaluated to ensure proper alignment to each other and to established course outcomes.
3. In SP14 the SLOA assessment was recreated in a digital format. As this question has a large amount of visual information (data sets), a selection of students will be given this question in paper form and another via computer to determine if this could be a contributing factor.
4. The course delivery team will discuss item #13, how the concept is covered in different sections, and what practices seem to be successful. Faculty will be encouraged to investigate and incorporate best practices in the delivery of this course concept.

Budget Justification:
1. No extraordinary funding is required for this course at this time.

Course: MAT 109   **Lead Faculty: T. Crawford**

	SU 2010	FA 2010	SP 2011	SU 2011	FA 2011	SP 2012	FA 2012	SP 2013	SU 2013	FA 2013	SP 2013
# Active students	43	40	61	61	79	93	147	176	106	173	221
# Withdraw % Withdraw	2.3	12.5	9.8	9.8	8.9	5.4	22 15%	19 11%	8 7.5%	16 9.2%	25 11.3%
# Walk-Away Fs* % Walk-Away Fs*							21 14%	23 13%	0 0%	15 8.7%	29 13.1%
# Success (A,B,C) % Success (A,B,C)	79.1	75.0	78.7	77.0	65.4	79.3	91 62%	125 71%	87 82.1%	120 69.4%	152 68.8%
Gen Ed SLOA							68%	70%	N/A	64.6%	63.3%
Course SLOA		66.0	61.4				45.7%	43.2%	41.8%	43.8%	41.8%
SLOA Item Analysis							TBD	TBD	TBD	TBD	TBD
Mean Course Grade	2.62	2.80	2.89	2.87	2.17	2.24	2.78	2.89	2.82	2.29	2.10

*Did not take the final exam and received a grade of F.