Course Outcomes Guide (COG)

Course Title: Math 203, Calculus I   **Date:** May 2019

Course Team: Jennifer Szczesniak

Expected Learning Outcomes

General Education 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 Outcomes:
In this course students will acquire:

1) **TECHNICAL COMPETENCY** in the methods of calculus that will enable them to find limits, derivatives and integrals of algebraic and transcendental real-valued functions of a single variable and to recognize the setting in which the result applies. *(Supports Mathematics Program Outcomes 1 and 5)*

2) **CONCEPTUAL UNDERSTANDING** of limits, continuity, differentiation and integration and the theorems that relate these topics.   Conceptual understanding will be developed by requiring students to view and understand these topics and their related theorems from numeric, geometric, algebraic and written/verbal perspectives. **(The Rule of Four).** *(Supports Mathematics Program Outcomes 1, 2, 4 5, 6 and 7)*

3) **UTILITY** in the methods of calculus. Students will use calculus to solve applied problems from a variety of disciplines ranging from biology, economics, business, engineering, and the social sciences, but primarily focusing on applications from physics and mathematics. *(Supports Mathematics Program Outcomes 1, 2, 4, 5, 6 and 7)*

Assessment
The assessment tool is a series of 12 questions, 10 multiple choice and 2 open-ended. These questions are all retired AP A/B or B/C Calculus test questions. Each question has data to indicate how AP test students did on the question which we will use as a benchmark. These questions are all taken from the no-calculator portion of the AP exams.

Validation

As stated above, all questions come from a benchmarked source.

Results

The mean course grade, the common assessment score, and the success rates for this course are moving around like a roller coaster. There is no discernable pattern to this data. Our scores on the common assessment are improving over time.

Follow-up

- Work with those teaching the course to find interesting conceptual problems to address the weak scores for SLO 2.
- Monitor the results for the summer section of the course. While these results may be attributed to a different population of students taking the summer section, these results are the complete opposite of those of MAT 161. In MAT 161 success and mean course grade drop drastically in the summer while here they are dramatically higher.

Budget Justification

No budget resources are immediately anticipated.

Course: MAT 203 SLOA Data

	16/SU	16/FA	17/SP	17/SU	17/FA	18/SP	18/SU	18/FA	19/SP
# Active students	19	45	44	29	55	41	19	65	34
%W	5.3	4.4	4.5	0	1.8	7.3	10.5	4.6	2.9
*% walk-away Fs No final exam/grade = F	0	2.2	0	0	1.8	0	0	0	5.9
% Success (A,B,C)	84.2	68.9	77.3	96.6	81.8	73.2	89.5	63.1	88.2
Common Comprehensive Final Exam Score (Benchmark: 12.59)	12.00	7.91	10.00	--	10.1	9.63	14.71	10.97	13.38
Mean course grade	3.06	2.33	2.71	2.76	2.67	2.55	2.88	2.18	2.85
Item Analysis **Weakest Content Areas**	SLO 3	SLO 2	SLO 2	NA	SLO 2	SLO 2	SLO3	SLO2	SLO2

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

These results do not include students taking the course at the local high schools as part of the dual enrollment program.