Course Outcomes Guide (COG)

Course Title: MAT 206 – Differential Equations   **Date:** May 2019

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Expected Learning Outcomes

GENERAL EDUCATION
Upon successful completion of this course, a student should 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.

STUDENT LEARNING OUTCOMES:
Upon successful completion of this course, students will learn:
1. To solve linear differential equations.
2. To solve given types of non-linear differential equations.
3. To use Laplace transformations to solve differential equations.
4. To use differential equations to solve application problems.
5. To classify a given equation and determine a method to use to solve that equation.
6. To work effectively in groups.
7. To use technology, in the form of a computer algebra package, the graphing calculator and other programs, to assist in the problem-solving process.
8. To effectively communicate results and the thought process that led to those results.

Assessment

- In Spring 2014 we revised the assessment tool to use all data that can be compared to a national benchmark. This assessment is generally given as part of the final exam for the course. The tool was pared down for 19/SP so that the final exam fits more appropriately in the designated time period.

Validation

- All of our questions come from retired AP Calculus exams for which national data is available. This will allow us to benchmark our students' results against a national average.

SLOA Data

	15/SP	16/SP	17/SP	18/SP	19/SP
# Active students	26	30	21	33	18
%W	3.8	0	0	3	0
% walk-away Fs No final exam/grade = F	7.7	0	4.8	6.1	11.1
% Success (A,B,C)	80.8	96.7	90.5	87.9	83.3
Common Assessment Average Score	10.48	12.40	5.56	13.34	5.56*
Benchmark Score	8.38	8.38	8.38	8.38	4.68*
Mean course grade	3.04	3.50	3.19	3.28	3.22
Item Analysis Weakest Outcome	SLO 7	SLO 7	SLO 7	SLO 1	SLO 1

*Note that the number of questions on the assessment tool was adjusted to make the tool a more reasonable part of the final exam time period.

Results

- Average assessment scores are still above the benchmark score. The results show, even with increased review, the material from the beginning of the course in SLO 1 is again the outcome with the worst result.

Follow-up
- I am still working on refining a group project to include for assessment of SLO 6. In every class section I teach, there is always one person who refuses to work in a group. I may end up assigning groups with this particular project.
- SLO 1 topics are covered at the beginning of the semester and I will again try to include more review as we approach the final exam.

Budget Justification

- The cost of the Symbolic Math Toolbox, an extension to the MATLAB program we already use in the engineering program, is necessary to ensure that the students will be able to transfer the course to UMD.