

Course Outcomes Guide (COG)

Course Title: MAT 207 – Discrete Mathematics

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.

COURSE LEARNING OUTCOMES:

Upon successful completion of this course, students will:

1. Write a correct proof, including proof by induction.
2. Solve counting problems and basic probability problems using combinatorial techniques.
3. Verbally explain the relationship between a statement and its converse, inverse, and contra-positive, including how to correctly negate statements.
4. Perform set operations, including intersection, union, and finding the complement.
5. Demonstrate an understanding of the fundamental concepts of graph theory including but not limited to graphs, digraphs, trees, finding paths and cycles, weighted graphs and graph coloring.
6. Use algorithms and write basic algorithms for completing a process.
7. Use recursively and/or iteratively defined functions.

Assessment

A common assessment with eight multiple choice questions was developed from questions taken from retired PRAXIS and GRE Math Subject exams. These two exams have different populations of people taking them, which also varies from the population taking a discrete math course, but it is the only way we have to get benchmarked questions for the course.

There was an additional question added in 16/FA in coordination with a source from Mount Saint Mary's. The source, my husband, refuses to grade using a rubric or provide a rubric on how he graded the problem. I am trying to adapt my grading to how he graded the same problem, but maybe I am still grading the problem more difficultly.

Validation

As stated above, all questions are taken from tests given to students across the nation. The last problem is being compared to similar students at a four-year college. Although the populations vary from the population taking MAT 207, this is as close as we can get to comparable data.

Results

While our common assessment scores look low compared to the benchmark, those taking the benchmark tests are either planning on becoming high school math teachers or are planning on entering graduate school for mathematics. Many of our students are not considering either of these possible career paths, so the numbers are not at all distressing.

The weakest area assessed was again SLOA 7. This is not surprising as this is one of the newest concepts for most students and there is just one problem on the assessment to address this topic.

Follow-up

This coming year I will continue to try to find additional examples of recursively defined functions. I will also try to make some of the material more relatable using real-world applications.

Budget Justification

There are no budget requests foreseen at this time for this course.

SLOA Data

	14/FA	15/FA	16/FA	17/FA	18/FA
# Active students	17	23	13	18	20
% W	0	4.3	0	0	0
*% walk-away Fs No final exam/grade = F	5.9	0	0	5.6	0
% Success (A,B,C)	94.1	91.3	100	88.9	90
Common Assessment Average Score (out of 8)	3.44	4.0	7.67	7.69	8
Benchmark Score	4.77	4.77	10.9	10.9	10.9
Mean course grade	3.12	3.41	3.5	3.11	3.15
Item Analysis Weakest Content Areas	SLO 2	SLO 7**	SLO 7**	SLO 7**	SLO 7**

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

** SLO 6 and SLO 7 were added when MAT207 was made into a 4 credit course.