



**Course Outline
MGF 1107
Mathematics for the Liberal Arts (6)**

General Course Information

Common Course Number: MGF1107

Course Title: Mathematics for the Liberal Arts (6)

Prerequisite(s): Minimum grade of C in MGF 1106, MAT 1033C, MAC 1105, or STA 2023 or appropriate score on an approved assessment

Contact Hour Breakdown: CR 3 CLASS 3 LAB 0

Discipline: Mathematics

Catalog Description: This course covers topics chosen from problem solving, numeration and mathematical systems, financial mathematics, voting techniques and apportionment, chaos theory, graph theory, knot theory, tilings and polyhedra, game theory, number theory, connections to other disciplines, and other special topics in mathematics. Gordon Rule course. Minimum grade of C required if course is used to satisfy Gordon Rule and general education requirements.

Major Topics/ Concepts/ Skills/ Issues

- MGF 1107 topics may include, but are not limited to, those found in the catalogue description above. Topics in MGF 1106 may NOT be done in MGF 1107. (See MGF 1106 Course Outline for the topics list for that course.)

Major Learning Outcomes with Evidence, Core Competencies and Indicators

The student will learn that mathematics is an evolving discipline with new areas of study as well as new results and applications of older ideas. (Evidence of learning will vary based on topics included in the course.)	
Corresponding Evidence of Learning	
<ul style="list-style-type: none"> • Student will be able to create a check digit for an identification number, if Number Theory is a topic in the course. • Student will be able to recognize fractal patterns and tessellations, if Geometry is a topic in the course. • Student will be able to create optimal networks in a weighted graph, if Graph Theory is a topic in the course. 	
Core Competency: Think	
Indicators	Assessments
<ul style="list-style-type: none"> • employ the facts, formulas, procedures of the discipline • revise conclusions consistent with new observations, interpretations, or reasons 	<ul style="list-style-type: none"> • Classroom assessment technique • Locally developed exam/objective • Problem-solving quiz • Project
Core Competency: Communicate	
Indicators	Assessments
<ul style="list-style-type: none"> • employ methods of communication appropriate to your audience and purpose 	<ul style="list-style-type: none"> • Locally developed exam/objective • Problem-solving quiz • Project
The student will learn to implement some of the fundamental methods of each of the areas of mathematics included. (Evidence of learning will vary based on topics included in the course.)	
Corresponding Evidence of Learning	
<ul style="list-style-type: none"> • Student will be able to apply algorithms such as Kruskal's Algorithm for finding a minimum-cost spanning tree, if Graph Theory is a topic in the course. • Student will be able to use Euler's formula for polyhedra to solve problems about the number of edges, faces, and vertices of a polyhedron, if Polyhedra is a topic in the course. • Student will be able to create a unique tessellation of a square, if Tilings is a topic in the course. • Student will be able to translate a Hindu-Arabic numeral into an Egyptian, Roman, Chinese, Greek, Babylonian or Mayan numeral, if Systems of Numeration is a topic in the course. 	

Core Competency: Think	
Indicators	Assessments
<ul style="list-style-type: none"> ● employ the facts, formulas, procedures of the discipline ● revise conclusions consistent with new observations, interpretations, or reasons 	<ul style="list-style-type: none"> ● Classroom assessment technique ● Locally developed exam/objective ● Problem-solving quiz ● Project
Core Competency: Communicate	
Indicators	Assessments
<ul style="list-style-type: none"> ● employ methods of communication appropriate to your audience and purpose 	<ul style="list-style-type: none"> ● Locally developed exam/objective ● Problem-solving quiz ● Project
The student will learn how a variety of problems in society can be described mathematically, and that different methods can lead to different answers to a problem. (Evidence of learning will vary based on topics included in the course.)	
Corresponding Evidence of Learning	
<ul style="list-style-type: none"> ● Student will be able to determine the outcome of an election using the four different methods of counting votes, given a preference table, if Voting Theory is a topic in the course. ● Student will be able to apply algorithms such as the Nearest Neighbor and Brute Force methods to find solutions to Traveling Salesman Problems, if Graph Theory is a topic in the course. ● Student will be able to calculate compound interest in savings and loans problems, if Financial Math is a topic in the course. ● Student will be able to recognize examples of different types of games (such as zero-sum v. non-zero-sum, sequential v. simultaneous), if Game Theory is a topic in the course. 	
Core Competency: Think	
Indicators	Assessments
<ul style="list-style-type: none"> ● employ the facts, formulas, procedures of the discipline ● revise conclusions consistent with new observations, interpretations, or reasons 	<ul style="list-style-type: none"> ● Classroom assessment technique ● Locally developed exam/objective ● Problem-solving quiz ● Project
Core Competency: Communicate	
Indicators	Assessments
<ul style="list-style-type: none"> ● employ methods of communication appropriate to your audience and purpose 	<ul style="list-style-type: none"> ● Locally developed exam/objective ● Problem-solving quiz ● Project

General Education Outcome Indicators

The student will learn that mathematics is an evolving discipline with new areas of study as well as new results and applications of older ideas. (Evidence of learning will vary based on topics included in the course.)	
CRITICAL THINKING Effectively analyze, evaluate, synthesize and apply information and ideas from diverse sources and disciplines.	
Indicators	Assessments
<ul style="list-style-type: none"> ● Comprehending data/information ● Analyzing data 	<ul style="list-style-type: none"> ● A common question will be embedded in the final exam. A stratified random sample of students will be selected. The student artifacts will be evaluated using a set of common rubrics for each learning outcome.
The student will learn to implement some of the fundamental methods of each of the areas of mathematics included. (Evidence of learning will vary based on topics included in the course.)	
QUANTITATIVE AND SCIENTIFIC REASONING - QUANTITATIVE Use processes, procedures, data, or evidence to solve problems and make effective decisions.	
Indicators	Assessments
<ul style="list-style-type: none"> ● Classifying and utilizing facts and formulas correctly ● Solving using appropriate procedures 	<ul style="list-style-type: none"> ● A common question will be embedded in the final exam. A stratified random sample of students will be selected. The student artifacts will be evaluated using a set of common rubrics for each learning outcome

[College Curriculum Committee Website](#)

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