

**MGF 1107 Liberal Arts Mathematics II**

The purpose of this course is to demonstrate the utility and beauty of mathematics with an emphasis on critical thinking, the communication of mathematical ideas, and applications to real life. The course is intended for, but not limited to, students who need to satisfy a general education mathematics requirement and are in programs which do not require calculus. THIS COURSE IS NOT A PREREQUISITE FOR MGF 1106.

PREREQUISITE: MAT 1033 Intermediate Algebra (with a minimum grade of C?)

*Topics*

## I. Financial Mathematics

- A. Simple and compound interest
- B. Mortgages and annuities
- C. Revolving lines of credit
- D. Installment loans
- E. Other applications involving percentages
  1. Percent increase/decrease
  2. Taxes
  3. Discounts and mark-ups

## II. Numeration Systems and Number Theory

- A. Historical numerations systems
- B. Arithmetic in bases other than base ten
- C. Properties of and operations with real numbers
- D. Basic principles of groups and modular arithmetic

## III. Voting and Apportionment

- A. Methods of tabulating votes
- B. Apportionment techniques

## IV. Graph Theory

- A. Graphs, paths, circuits and trees
- B. Applications with graphs, paths, circuits and trees

V. Optional Topics [These topics are provided as ideas for projects to supplement the core curriculum of I. through IV. especially in Honors sections, but should not diminish the depth of exploration within the core.]

- A. Other geometries, including but not limited to:
  1. Non-Euclidean
  2. Transformational (Tilings)
  3. Topology
  4. Fractals
- B. Coding systems
- C. Cryptography
- D. Other emerging topics