

Miami Dade College
MGF 1107 Mathematics for Liberal Arts II

Course Description: This course introduces the student to the concepts of financial mathematics, linear and exponential growth, numbers and number systems, history of mathematics, elementary number theory, voting techniques, and graph theory

Pre-requisite: MAT 1033 with a grade of C or better or equivalent

Credits: 3

Course Competencies:

Competency 1: The student will demonstrate knowledge of financial mathematics by:

- a. Differentiating between simple and compound interest.
- b. Computing the present and future value of lump sums or streams of payments.
- c. Constructing amortization schedules and computing payments on installment loans.

Competency 2: The student will demonstrate knowledge of linear and exponential growth by:

- a. Utilizing the coordinate plane to graph relationships.
- b. Differentiating between linear and exponential growth.
- c. Developing models of population growth using linear and exponential growth concepts.

Competency 3: The student will demonstrate knowledge of numbers and number systems by:

- a. Describing a number system and its use.
- b. Describing the evolution of the real number system.
- c. Converting numbers written in one base to another.

Competency 4: The student will demonstrate knowledge of the History of Mathematics by:

- a. Presenting some of the important events and personalities in the history of mathematics.

Competency 5: The student will demonstrate knowledge of elementary number theory by:

- a. Applying the properties of the integers and their structure in relation to the prime numbers.
- b. Computing the least common multiple and greatest common factor of two numbers using the Euclidean Algorithm.
- c. Performing operations with modular arithmetic.

Competency 6: The student will demonstrate knowledge of Voting Techniques by:

- a. Distinguishing between plurality, Borda Count, plurality with elimination and pairwise comparison voting methods.
- b. Stating what reasonable criteria a voting method must have.
- c. Determining the flaws in a voting method.
- d. Determining winning conditions.

Competency 7: The student will demonstrate knowledge of Graph Theory by:

- a. Defining the basic terms used in graph theory.
- b. Using graphs to model relationships of sets of objects.
- c. Applying Euler's Theorem to solve problems.
- d. Using Fleury's Algorithm to find Euler Circuits.
- e. Solving routing problems by using graph Eulerization.