

**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.