Miami Dade College

Course Description

MGF1130 | Mathematical Thinking | 3 credits

In this course, students will utilize multiple means of problem solving through student-centered mathematical exploration. The course is designed to teach students to think more effectively and increase their problem-solving ability through practical application and divergent thinking. This course is appropriate for students in a wide range of disciplines/programs. Student learning outcomes: students will determine efficient means of solving a problem through investigation of multiple mathematical models; students will apply logic in contextual situations to formulate and determine the validity of logical statements using a variety of methods; students will apply mathematical concepts visually and contextually to represent, interpret and reason about geometric figures; students will recognize the characteristics of numbers and utilize numbers along with their operations appropriately in context; and students will analyze and interpret representations of data to draw reasonable conclusions. Prerequisite: Student must meet the Developmental Education mathematics requirements in State Rule 6A-10.0315 (by course, placement score, or eligible exemption).

Course Competencies

Competency 1:

Students will recognize the characteristics of numbers and utilize numbers along with their operations appropriately in context by:

- Describing a number system and its properties
- Applying the order of operations to real numbers
- Solving applications using real numbers

Learning Outcomes

- Numbers / Data
- Critical thinking

Competency 2:

Students will apply mathematical concepts visually and contextually to represent, interpret and reason about geometric figures by:

- Converting and rounding units of measurement
- Computing perimeters, areas, and volumes of various plane and solid figures
- Calculating angles and applying the Pythagorean Theorem

Learning Outcomes

- Numbers / Data
- Critical thinking

Competency 3:

Students will determine efficient means of solving a problem through investigation of multiple mathematical models by:

- Differentiating between linear and exponential models.
- Solving multiple problems in context.

Learning Outcomes

- Numbers / Data
- Critical thinking

Competency 4:

Students will apply logic in contextual situations to formulate and determine the validity of logical statements using a variety of methods by:

- Analyzing/determining negations, disjunctions, conjunctions and various forms of conditional statements
- Determining the validity of arguments, using symbolic logic and/or Venn Diagrams

Learning Outcomes

- Critical thinking
- Information Literacy
- Communication

Competency 5:

Students will analyze and interpret representations of data to draw reasonable conclusions by:

- Reading and interpreting charts, tables, and graphs.

Learning Outcomes

- Numbers / Data
- Critical thinking
- Information Literacy