Course Syllabus

Course Information

Course Title: College Algebra

Subject and Number: MAC 1105

Course Description: This course introduces the student to the concept of functions and their graphs. The student will learn to graph linear, quadratic, rational, exponential, logarithmic, radical, power, and absolute value functions and their transformations. The student will perform operations on functions and compositions of functions, find the inverse of a function, apply the laws of logarithms to simplify expressions and solve equation, graph non-linear inequalities, and solve related applications and modeling problems. Prerequisite: MAT 1033 with a grade of "C" or better. Fulfills Gordon Rule computational requirement.

Class Number:

Term and Year:

Course Modality: MDC Modalities

Instructor Information

Name:

Department and Campus:

Office location:

Office hours:

Phone number:

Email:

Communication Policy:

Required Textbook, Course Materials, and Technology

Required course materials:

List optional/supplemental materials/OER:

Technology & Technical Skill Requirements:

Grading Policy & Assessment Methods

Incomplete Grades: View the college's procedures for Incomplete Grades

Miami Dade College Policies

Attendance Policy:

Students Rights and Responsibilities:

For more information, visit the Student's Rights and Responsibilities page

Available Support Services & Resources

- Tutoring Labs and Technology – Learning Resources
- Virtual Tutoring through Learning Resources or Smarthinking Online Tutoring
- ACCESS: A Comprehensive Center for Exceptional Student Services
- Advisement
- Password and Login Technical Support
- Technical Support for MDC Live and MDC Online Courses
- SMART Plan

(Faculty select from the above if applicable and include additional course/campus specific resources)

Available Support Services & Resources

- Public Safety - Services
- Hurricane and Other Natural Disasters: In the event of a hurricane or other disaster, the class follows the schedule established by the College for campus-based courses. Please visit the MDC website or call the MDC Hotline (305-237-7500) for situation updates.

Course Description

MAC1105 | College Algebra | 3 credits

This course introduces the student to the concept of functions and their graphs. The student will learn to graph linear, quadratic, rational, exponential, logarithmic, radical, power, and absolute value functions and their transformations. The student will perform operations on functions and compositions of functions, find the inverse of a function, apply the laws of logarithms to simplify expressions and solve equation, graph non-linear inequalities, and solve related applications and modeling problems. Prerequisite: MAT 1033 with a grade of "C" or better. Fulfills Gordon Rule computational requirement.

Course Competencies

Competency 1:

The student will demonstrate knowledge of absolute value equations and inequalities by:

- Solving absolute value equations.
- Solving absolute value inequalities.

Learning Outcomes

- Critical thinking
- Information Literacy
- Numbers / Data

Competency 2:

The student will demonstrate knowledge of complex numbers by:

- Simplifying radicals with negative radicands by using the definition of i.
- Simplifying powers of i.
- Adding, subtracting, multiplying and dividing complex numbers.

Learning Outcomes

- Critical thinking
- Information Literacy
- Numbers / Data

Competency 3:

The student will demonstrate knowledge of functions, from a numerical, graphical, verbal and analytic perspective by:

- Distinguishing if a given relation isa function.
- Evaluating and using functional notation.
- Using the vertical line test to determine if a graph represents a function.

- Identifying and finding the domain and range of relations and functions.
- Performing operations on functions.
- Forming function compositions.
- Finding the inverse of a function.
- Graphing functions, including absolute value, radical and power functions with and without transformations.
- Graphing the inverse of a function.
- Analyzing and classifying the symmetry of functions.
- Defining, evaluating and graphing basic piecewise-defined functions.

Learning Outcomes

- Communication
- Critical thinking
- Information Literacy
- Numbers / Data
- Social Responsibility

Competency 4:

The student will demonstrate knowledge of quadratic equations and functions by:

- Solving quadratic equations and equations quadratic in form using any available method.
- Using quadratic equations and their solutions to answer modeling questions.
- Using the discriminant to identify the types of solutions for quadratic equations.
- Graphing quadratic functions and identifying the vertex, x-intercept, y-intercept and the axis of symmetry of the graph.
- Finding the maximum or minimum value of a quadratic function in applications.

Learning Outcomes

- Communication
- Critical thinking
- Information Literacy
- Numbers / Data
- Social Responsibility

Competency 5:

The student will demonstrate knowledge of systems of linear equations and inequalities by:

- Solving systems of linear equations into variables using Substitution and Addition (also known as Elimination) methods.
- Solving systems of linear equations in three variables.
- Solving systems of linear inequalities.

- Solving applications and modeling using systems of linear equations and inequalities.

Learning Outcomes

- Communication
- Critical thinking
- Information Literacy
- Numbers / Data
- Social Responsibility

Competency 6:

The student will demonstrate knowledge of exponential and logarithmic functions by:

- Graphing exponential and logarithmic functions with and without transformations.
- Identifying the domain and range of an exponential or logarithmic function.
- Applying properties of logarithms to expand and condense logarithmic expressions.
- Solving exponential and logarithmic equations.
- Applying modeling techniques to solve problems of exponential growth and decay.

Learning Outcomes

- Communication
- Critical thinking
- Information Literacy
- Numbers / Data
- Social Responsibility

Competency 7:

The student will demonstrate knowledge of polynomial and rational functions and inequalities by:

- Graphing polynomial functions.
- Graphing rational functions.
- Determining domain of rational functions.
- Solving polynomial and rational inequalities and graphing their solution set.

Learning Outcomes

- Critical thinking
- Information Literacy
- Numbers / Data

Competency 8:

The student will demonstrate knowledge of equations in two variables by:

- Recognizing and graphing equations that represent circles.
- Writing the equation of the circle given the center and radius.
- Determining the distance between two points and midpoint coordinates.

Learning Outcomes

- Critical thinking
- Information Literacy
- Numbers / Data

If this is an MDC Online Course, there may be remote proctoring fees incurred