

Instructor:	Carlos Sotuyo	Class #:	2263
Office:	https://us.bbcollab.com/guest/94233cd29f4344cdad090abc242d09c3	Term:	2215
Email:	csotuyo@mdc.edu	Department Phone:	305-237-2431
Day/Time:	TuTh 3:10PM - 6:30PM	Room:	Classroom: 9120 (building 9) Blackboard link: https://us.bbcollab.com/guest/03397a30a03e43768aad08592bbf679e

Office Hours						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
	2:05 -3:05 PM		2:05 -3:05 PM			

Withdrawal Date, with refund: May 12. Withdrawal Date, with W: June 4. Holidays: May 31st, Memorial Day

Course Description:

This course will cover properties and graphs of algebraic, exponential, and logarithmic functions, piecewise-defined functions, the Fundamental Theorem of Algebra, solutions of polynomial equations, conic sections systems of equations, matrices and determinants, arithmetic and geometric sequences and series, the Binomial Theorem, and corresponding applications and modeling. (3 hr. lecture). Prerequisite: MAC1105

Text and Requirements:

College Algebra and Trigonometry, by Julie Miller and Donna Gerken. We will be using [ALEKS](#) for this course. Please register for ALEKS at www.aleks.com . All assignments are due the day of the corresponding unit test. Your Course ID is: [DYEKX-WXR3T](#)

Technical Requirements:

Access to a personal computer running Windows or MAC OS with a working web camera and microphone. A scientific calculator is required. Graphing calculators **are not** permitted during examinations.

Method of instruction:

Blended: a mix of online and traditional in-person instruction. Social distancing protocols will be followed when meeting in person. Students will attend classes on campus based on a rotational scheduled.

Attendance:

Attendance will be taken during each class period. Students who miss two or more classes may be withdrawn from the course. If you expect to miss a class or have missed a class for a valid reason, email your instructor.

WHAT CONSTITUTES AN ABSENCE IN THIS CLASS?

- 1) Physical/Virtual absence from a class
- 2) Inactivity in Aleks (1-week inactivity in Aleks = 1 absence)

Conduct:

In order to optimize your learning experience, classroom interruption must be kept to a minimum. Please make every effort to arrive on time and avoid causing an interruption if you need to leave early. Please turn your cell phone to a silent mode and avoid using it during class. In an emergency, you may excuse yourself and leave the classroom. In addition, while attending the virtual classroom, please be sure your microphone is on mute unless asked to unmute your microphone.

Registration and Withdrawal:

It is the students' responsibility to make sure they are registered for the course, and not dropped due to late payments or any other circumstances that may have come up. It is also the students' responsibility to drop the course before the drop deadline if they feel they will not be able to complete the course.

Academic Dishonesty Policy:

If a student is caught cheating, that student will automatically fail the course, and will be referred to the dean. For additional information on academic dishonesty policies, please refer to the [Student's Rights and Responsibilities Handbook](#).

Grading Policy:

The grade for this course will be based on homework and five equally weighted exams. There will be an optional final, which if taken will replace your lowest test score. All exams will take place online. You can use the following formula to calculate your grade in the course:

$$\text{Grade} = \frac{T_1 + T_2 + T_3 + T_4 + T_5 + HW}{6}$$

Your final grade will be distributed according to the following scale:

Average of 90-100%	A
Average of 80-89%	B
Average of 70-79%	C
Average of 60-69%	D
Average below 60%	F

Only an average of 69, or 79 or 89 are rounded up to 70, 80 and 90 respectively.

Tests will be administered synchronously for the entire class, via ALEKS (proctored by [respondus monitor](#)). Missing a test for any reason will result in a zero score for that exam. If you miss an exam due to an emergency that would qualify as an excused absence, you must inform your instructor within 24 hours of the scheduled exam. In the case of an excused absence for an exam, the make-up exam will be administered in the classroom on June 16, during the final week of the course. Excused absences for exams: the student's serious illness documented by a medical Doctor, death in immediate family, religious holiday observance of one's own faith or attendance to statutory governmental responsibilities. **Note:** missing a test due to

technical issues (internet connection, for example) qualifies as a valid reason; therefore, the make-up test will be administered in the classroom on June 16, the day before the Final.

Resources:

Free tutoring available from the math lab. To schedule an appointment, use the link below:

<https://www.mdc.edu/kendall/math/>

Tentative Schedule: Schedule may be changed at the professor's discretion, you're responsible to verify dates and topics.

<i>Date:</i>	<i>Section</i>	<i>Topic</i>
5/11	2.3	Review of Functions
	2.7	Piecewise Defined Functions
	3.2	Polynomial Functions
	3.3	Division of Polynomials and the Remainder and Factor Theorems
	3.4	Zeros of Polynomials
5/13	3.5	Rational Functions
	3.6	Polynomial and Rational Inequalities
5/18		Q&A + Test 1 Online Using ALEKS
5/20	4.1	Inverse Functions
	4.2	Exponential Functions
	4.3	Logarithmic Functions
	4.4	Properties of Logarithms
	4.5	Exponential and Logarithmic Equations and Applications
5/25		Q&A + Test 2 Online Using ALEKS
5/27	10.1	Solving Systems of Linear Equations Using Matrices
	10.2	Inconsistent Systems and Dependent Equations
	10.3	Operations on Matrices
	10.4	Inverse Matrices and Matrix Equations
	10.5	Determinants and Cramer's Rule
6/1		Q&A + Test 3 Online Using ALEKS
6/3	11.1	The Ellipse
	11.2	The Hyperbola
	11.3	The Parabola
6/8		Q&A + Test 4 Online Using ALEKS
6/10	12.1	Sequences and Series
	12.2	Arithmetic Sequences and Series
	12.3	Geometric Sequences and Series
	12.4	Mathematical Induction
	12.5	The Binomial Theorem
6/15		Q&A + Test 5 Online Using ALEKS
6/17		Final Online Using ALEKS

Course Competency

Competency 1: The student will demonstrate knowledge of piecewise defined functions by:

1. Graphing advanced piecewise defined functions

Competency 2: The student will demonstrate knowledge of exponential and logarithmic functions, their properties and their graphs by:

1. Defining the exponential and logarithmic functions and their inverse relationship
2. Evaluating exponential and logarithmic expressions
3. Graphing the exponential and logarithmic functions with and without transformations
4. Identifying the domain and range of an exponential or logarithmic function
5. Applying properties of logarithms to expand and condense logarithmic expressions
6. Solving exponential and logarithmic equations
7. Applying modeling techniques to solve problems of exponential growth and decay

Competency 3: The student will demonstrate knowledge of polynomial functions by:

1. Analyzing the graph of a polynomial function, its behavior near its zeros and its end behavior
2. Stating the Fundamental Theorem of Algebra
3. Using appropriate rules or theorems to determine the existence, multiplicity, location, and classification of real and complex zeros of a polynomial function
4. Sketching the graph of a polynomial function
5. Building a polynomial function given its zeros and their multiplicity or its graph

Competency 4: The student will demonstrate knowledge of rational functions by:

1. Finding vertical, horizontal and oblique asymptotes
2. Determining domain of rational functions
3. Graphing rational functions
4. Analyzing the behavior of a rational function near the point of discontinuity and the end Behavior

Competency 5: The student will demonstrate knowledge of polynomial and rational equations and inequalities by:

1. Solving systems of non-linear equations
2. Solving linear and non-linear inequalities
3. Graphing their solution set

Competency 6: The student will demonstrate knowledge of conic sections by:

1. Identifying conic sections as the result of intersecting a plane with a cone
2. Identifying and graphing the different conic sections
3. Writing an equation for a conic in standard or general form where applicable, by identifying the corresponding parts of the conic
4. Solving application problems involving parabolas, ellipses, and hyperbolas

Competency 7: The student will demonstrate knowledge of matrices and determinants by:

1. Defining matrices and dimensions of matrices
2. Performing algebraic operations on matrices
3. Evaluating determinants
4. Solving linear systems using matrices and determinants
5. Identifying consistent and inconsistent systems

Competency 8: The student will demonstrate knowledge of sequences and series by:

1. Defining sequences and series (including arithmetic and geometric)
2. Writing the n th term of sequences
3. Finding the sums of series (including arithmetic and geometric)
4. Defining sequences by using the general term or a recursive formula
5. Using the summation notation properties to express and evaluate sums

Competency 9: The student will demonstrate knowledge of mathematical induction by:

1. Proving that a given formula is true through the Principle of Mathematical Induction

Competency 10: The student will demonstrate knowledge of the Binomial Theorem by:

1. Expanding a binomial using the Binomial Theorem
2. Finding the n th term of a binomial sequence

As graduates of Miami Dade College, students will be able to:

1. Communicate effectively using listening, speaking, reading, and writing skills.
2. Use quantitative analytical skills to evaluate and process numerical data.
3. Solve problems using critical and creative thinking and scientific reasoning.
4. Formulate strategies to locate, evaluate, and apply information.
5. Demonstrate knowledge of diverse cultures, including global and historical perspectives.
6. Create strategies that can be used to fulfill personal, civic, and social responsibilities.
7. Demonstrate knowledge of ethical thinking and its application to issues in society.
8. Use computer and emerging technologies effectively.
9. Demonstrate an appreciation for aesthetics and creative activities.
10. Describe how natural systems function and recognize the impact of humans on the environment.