

TOHONO O'ODHAM COMMUNITY COLLEGE



Syllabus: *MATH 151 College Algebra*

Course Information

Course Prefix/Number: MATH 151
Semester: Summer 2020
Class Days/Times: Online

Credit Hours: 4
Course Title: College Algebra
Room: Online

Instructor Information:

Name: Lucinda Begay

Phone (message only) : 520-345-6068

E-mail: lbegay@tocc.edu

Office location: N/A

Office hours: By appointment

Course Description:

Introduction to college-level algebra. Includes functions, polynomial and rational functions, exponential and logarithmic functions, linear 2×2 and higher systems, graphing, sequences and series, and real life math application.

After completion of the course students will be able to

1. Define a function in terms of ordered pairs, graphically, and algebraically.
2. Determine the domain of a function, and determine whether an element is in the range of a function.
3. Use the algebra of functions and composition of functions defined by the modes in objective 1.
4. Use the definition of one-to-one function and compute the inverse of a one-to-one function.
5. Define and calculate, exactly and by approximation, zeros and intercepts of functions.
6. Perform basic operations with complex numbers.
7. Find the zeros of polynomial functions algebraically and by approximation.
8. Given its zeros and their multiplicities, construct a polynomial function and sketch its graph.
9. Graph rational functions
10. Solve nonlinear inequalities algebraically and graphically.
11. Use the properties of exponential functions.
12. Use the concept of inverse functions to develop and work with logarithmic functions.
13. Solve exponential and logarithmic equations.

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14. Solve applications, by algebraic means and by approximation, using polynomial, radical, power, rational, exponential, and logarithmic functions.
15. Solve and classify solutions of 2 x 2 and higher systems of linear equations by matrix methods.
16. Solve application problems using linear systems.
17. Use the distance formula with simple applications.
18. Find the nth and general terms of sequences, including arithmetic and geometric sequences and sequences recursively defined.
19. Calculate sums of finite arithmetic and geometric series and convergent infinite geometric series.
20. Use graphing calculators (or other technology).

Student Learning Outcomes (SLOs):

After completion of the course students will be able to

- Graph, analyze and perform function operations.
- Create mathematical models using a variety of functions.
- Employ technology to set up and solve real world situations.

Texts and Materials:

Required: EducoSoft website (www.educosoft.com). An access code must be purchased through the college's bookstore.

[Required] A calculator that is NOT on a cell phone or electronic device. Apps: The "Free GraCalc 2" and "My script calc" apps can be downloaded from the Apple store. Optional graph calculator.

Evaluation:	Points:	Percent of Total Points:
Attendance (canvas and review sessions)	100	10%
Exams and Final	400	40%
Online Work Practice (Educosoft)	200	20%
Tutorial Time (Khan Academy)	100	10%
Homework (Canvas)	200	20%
TOTAL	1000	100%

Himdag Cultural Component:

Course will explore existing college algebra and basic spatial relationship using materials to help understand how it applies to Tohono O'odham people to continue improving or restoring components of Himdag. Students will also formulate a personal ethic regarding the use of

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mathematical thinking in teaching and research, incorporating perspectives from TOCC Core values.

Policies and expectations-

Make-up policy:

Late assignments that can be made up will be accepted but will be penalized 25%. Laboratories cannot be made up except in the case of college closure. At the instructor's discretion, extra credit opportunities and optional activities may be provided.

Academic Integrity:

Violations of scholastic ethics are considered serious offenses by Tohono O'odham Community College, the Student Services Department, and by your instructor. Students may consult the TOCC Student Handbook sections on student code of conduct, on scholastic ethics and on the grade appeal procedure. Copies are available at Tohono O'odham Community College.

All work done for this class must be your own, or the original work of your group. While you may discuss assignments with other class members, the final written project must clearly be original. You may use work from books and other materials if it is properly cited. Copying from a book without proper reference or from a person under any circumstances will result in an "F" for the assignment, and at the instructor's discretion, possibly an "F" for the course. If you are uncertain about proper citations ask your instructor or the librarian.

Course Feedback:

All assignments will be graded and returned to the students promptly, typically within a week after the assignment is closed for handing in. E-mail and phone messages will be returned within two days. A student or the instructor may request a student conference at any time during the semester. Quarterly grade reports will be provided to each student, either in person, by email or via the electronic system of Canvas.

Attendance Policy

You are expected to arrive to class on time and be prepared to participate in each class period. Four unexcused absences may result in withdrawal and a "W" or "Y" will be recorded. You may request to be excused from class for religious observances and practices, for illness, for school or work-related travel or for personal or family emergency. If you will be absent, please notify the instructor as soon as possible (approved by Faculty Senate April 2014).

Incomplete Policy

Incomplete (I) grades are not awarded automatically. The student must request an "I" from the instructor who can choose to award an Incomplete only if all three of the following conditions are met:

1. The student must be in compliance with the attendance policy.

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2. The student must have unavoidable circumstance that would prohibit the student from completing the course.

3. The student must have completed over 75% of the course requirements with at least a "C" grade. Incompletes are not a substitute for incomplete work due to frequent absences or poor academic performance. Incomplete grades that are not made up by the end of the ninth week of the following semester will be automatically changed to an F if the agreed upon work, as stipulated on the written form signed by the instructor and the student when the I grade is awarded, is not completed.

Instructor Withdrawals

Students who have missed four consecutive online review classes (or the equivalent) not submitted any assignments nor taken any quizzes by the 45th day census report, due on [date of 45th day found in Academic Calendar on TOCC website] are assumed NOT to be participating in the class and may be withdrawn at the faculty member's discretion. [faculty members should be clear in their withdraw policy, if you do not withdraw students please note in appropriate sections].

Student Withdrawals

Students may withdraw from class at any time during the first 2/3 of the semester without instructor permission and without incurring any grade penalty. Please be sure to withdraw yourself by [withdrawal deadline date found in Academic Calendar on TOCC website] if you do not expect to complete the class, otherwise you may receive an "F" grade.

Special Withdrawals (Y) Grade

The "Y" grade is an administrative withdrawal given at the instructor's option when no other grade is deemed appropriate. Your instructor must file a form stating the specific rationale for awarding this grade. "Y" grades are discouraged since they often affect students negatively. Your instructor will not award a "Y" grade without a strong reason.

Equal Access Statement/Disability Accommodations

Tohono O'odham Community College seeks to provide reasonable accommodations for qualified individuals with disabilities. The College will comply with all applicable regulations, and guidelines with respect to providing reasonable accommodations as required to ensure an equal educational opportunity. This process includes self-identifying as a student with a disability, providing supporting documentation of their disability, and being approved for services through the Disability Resources Office (DRO). It is the student's responsibility to make known to their instructor(s) the student's specific needs within the context of each class in order to receive appropriate accommodations. We will work together in order to develop an accommodation plan specifically designed to meet the individual student's requirements.

For more information or to request academic accommodations, please contact: Anthony Osborn, TOCC Disabilities Resource Coordinator, aosborn@tocc.edu, or 520-360-5044 for additional information and assistance.

Title IX

Tohono O'odham Community College encourages each student to have the knowledge and skills to be an active bystander who intervenes when anyone is observed or being harassed or endangered by sexual

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violence. Sexual discrimination and sexual violence can undermine students' academic success and quality of life on campus and beyond. We encourage students who have experienced or witnessed any form of sexual misconduct to talk about their experience and seek the support they need.

Confidential support and academic advocacy can be found with: Student Services Title IX Coordinator/Counselor, Alberta Espinoza, M.Ed. located in I-We:mta Ki: Room 18. Phone 520-383-0033 email: aespinoza@tocc.edu

Conduct: Bias, Bullying, Discrimination and Harassment

Tohono O'odham Community College faculty and staff are dedicated to creating a safe and supportive campus environment as a core value. Harassment based on age, class, color, culture, disability and ability, ethnicity, gender, gender identity and expression, immigration status, marital status, political ideology, race, religion/spirituality, sex, sexual orientation, and tribal sovereign status will not be tolerated.

DISCLAIMER: *This syllabus is designed to evolve and change throughout the semester based on class progress and interests. You will be notified of any changes as they occur.*

SPECIAL NOTE TO STUDENT:

*For privacy and security reasons, instructors are advised **NOT** to give grades over the telephone. Grades will only be emailed with written permission from the student. Your instructor will make every attempt to follow the above procedures and schedules, but they may be changed in the event of extenuating circumstances.*

Students submitting assignments through the mail or by email are advised to make copies for their own protection. If you move during the semester, please file a change of address form with the Student Services Office, and inform your instructor.

GOOD LUCK! :)

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Course Outline:

- I. Functions
 - A. Definition
 - 1. By ordered pairs from table or other sources
 - 2. Graphically
 - 3. Algebraically
 - B. Domain and range
 - 1. Determine the domain
 - 2. Determine whether a number is in the range; find the range in other cases
 - C. Computations
 - 1. Algebra of functions
 - 2. Composition
 - 3. Find the inverse of a one-to-one function
 - 4. The zeros of functions
- II. Polynomial and Rational Functions
 - A. Computations
 - 1. Identify zeros and y-intercepts
 - 2. Remainder and Factor Theorems
 - 3. Fundamental Theorem of Algebra
 - 4. Applications of polynomials
 - 5. Non-linear inequalities
 - 6. Complex number solutions
 - B. Second degree polynomials
 - 1. Complete square to put in form to identify vertex
 - 2. Applications of maximum/minimum type
 - C. Rational Functions
 - 1. Use properties of polynomials to analyze rational functions
 - 2. Applications of rational functions
- III. Exponential and Logarithmic Functions
 - A. Properties and relationships
 - 1. Relate exponential and logarithmic as inverse functions
 - 2. Properties of logarithms
 - B. Problem solving
 - 1. Use part A to solve exponential and logarithmic equations
 - 2. Formulate and solve applied problems using exponential and logarithmic functions.
- IV. Linear 2×2 and Higher Systems
 - A. Solutions
 - 1. Identify solutions as ordered n-tuples
 - 2. Classify systems as consistent or inconsistent
 - 3. Applications of systems
 - B. Methods of solution
 - 1. By matrix methods
 - a. Gaussian elimination
 - b. Inverse matrix method
 - 2. Cramer's rule (optional)

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- V. Graphing
 - A. Determine and graph intercepts, zeros, and asymptotes for functions and equations in general, and, in particular, for the types of functions listed above
 - B. Use translations, reflections, and similar operations to obtain a new graph from a given graph
 - C. Use graphs to interpret and analyze applied problems
 - 1. The distance formula
 - 2. Circles
 - 3. Radical and power functions
- VI. Sequences and Series
 - A. Sequences
 - 1. Definition
 - 2. Determine n^{th} terms for recursively defined sequences
 - 3. Determine n^{th} terms for arithmetic and geometric sequences
 - B. Series
 - 1. Definition
 - 2. Calculate sums of finite arithmetic and geometric series and convergent infinite geometric series
- VII. iPad Use
 - A. Numerical calculations and evaluation of functions
 - B. Graph and analyze functions
 - C. Matrix computations
 - D. Other applications such as apps.

Tentative Fall Semester Schedule

Date	Assigned Reading	Topic	Assignments, Labs, Class Activities
8/19/2019		Intro to Class and syllabus	
8/21/2019	Ch. 1	Class Overview	
8/26 to 9/4	Ch. 1	Section 1.1 – 1.6	1.1 – 1.4
9/9/2019	Ch. 1	1.6 – Review Test 1	1.5-1.6
	Test 1	Ch 1: 1.1-1.6	
9/11/2019	Ch. 2	2.1 – 2.2	
9/16/2019	Ch. 2	2.2 – 2.3	
9/18/2019	Ch. 2	2.3- 2.4	2.1 – 2.2
9/23/2019	Ch. 2	2.4 – 2.5	
9/25/2019	Ch. 2	2.5 – 2.6	2.2 – 2.3
9/30/19 – 10/4/2019	Fall Break	No class October 3, 2019: 45 Day Census	
10/7/2019	Ch. 2	2.6 – Review Test 2	2.5 – 2.6
	Test 2	Ch 2: 2.1 – 2.6	
10/9/2019	Ch. 3	3.1 – 3.2	
10/14/2019	Ch. 3	3.2 – 3.3	

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10/16/2019	Ch. 3	3.4 – 3.5	3.1 – 3.2
10/21/2019	Ch. 3	3.6 – 3.7	3.3 – 3.4
10/23/2019	Ch. 3	3.7 – Review Test 3	3.5 – 3.7
	Test 3	Ch 3: 3.1 – 3.7	
10/28/2019	Ch. 4	4.1 -4.2	
10/30/2019	Ch. 4	4.2-4.3	
11/4/2019	Ch. 4	4.3 – 4.4	4.1 – 4.2
11/6/2019	Ch. 4	4.4 – 4.5	
11/13/2019	Ch. 4	4.5 - 4.6	4.3 – 4.4
11/18/2019	Ch. 4	4.6 – Review Test 4	4.5 – 4.6
	Test 4	Ch 4: 4.1 – 4.6	
11/20/2019	Ch. 5	5.1 -5.2	
11/25/2019	Ch. 5	5.2- 5.3	
11/27/2019	Ch. 5	5.3 – 5.4	5.1 – 5.2
12/2/2019	Ch. 5	5.4 – 5.5	
12/4/2019	Ch. 5	5.5 - 5.6	5.3 – 5.4
		5.6 – Review Test 5	
12/9/2019	Ch. 5	Review Final Exam	5.5 – 5.6
12/11/2019	Final Exam	1.1 – 4.9	FINAL EXAM
12/17/2019		Final Grades are due	

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