

TOHONO O'ODHAM COMMUNITY COLLEGE



Syllabus: *MATH 151 College Algebra*

Course Information

Course Prefix/Number: MATH 151	Credit Hours: 4
Semester: Fall 2019	Course Title: College Algebra
Class Days/Times: 4:30 pm to 6:10 pm, MW	Room: Main GSK 3

Instructor Information: Name: Lucinda Begay	Phone (message only) : 520-345-6068 E-mail: lbegay@tocc.edu Office location: N/A Office hours: By appointment
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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 iPad use.

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.
14. Solve applications, by algebraic means and by approximation, using polynomial, radical, power, rational, exponential, and logarithmic functions.

TOHONO O'ODHAM COMMUNITY COLLEGE

15. Solve and classify solutions of 2×2 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 n th 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 using iPads.
- Create mathematical models using a variety of functions.
- Employ technology to set up and solve real world situations.

Texts and Materials: An iPad is required for this class. Checking out and returning an Ipad from the Library is a requirement to obtain a grade in this class.

[Required] Registration in the 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.

Evaluation:	Points:	Percent of Total Points:
Attendance	100	10%
Exams and Final	400	40%
In-Class Work and Projects	200	20%
Tutorial Time	100	10%
Homework	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 mathematical thinking in teaching and research, incorporating perspectives from TOCC Core values.

TOHONO O'ODHAM COMMUNITY COLLEGE

Policies and expectations-

Attendance: The student is responsible for any work missed during an absence. In case of a valid emergency, contact the instructor using the information given on the first page.

Make-up policy: Missed exams can be made up within two days of the exam date. Late assignments that can be made up will be accepted but will be penalized 25%. 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. While you may discuss assignments with other class members, the final written project must clearly be your own. 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.

ADA Compliance:

Tohono O'odham Community College strives to comply with the provisions of the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. If you have a learning problem, physical disability, or medical illness that requires you to have any special arrangements, please inform your instructor at the beginning of the semester so your academic performance will not suffer because of the disability or handicap.

Classroom Behavior:

- Because of insurance limitations, non-registered visitors are not allowed at class sessions or on field trips.
- Possession of drugs, alcohol or firearms on college property is illegal.
- Food and beverages are allowed in classrooms.
- Pets, pagers and other electronic devices that distract students are NOT allowed in classrooms. Telephones should be turned off during class.
- Students creating disturbances that interfere with the conduct of the class or the learning of others will be asked to leave.

Student Conduct:

Please be respectful of myself and other students in the class. Disruptive behavior may result in you being asked to leave the class. Collegial behavior is required at all times. Turn off cell phones.

Homework Policy:

Homework has been assigned and it is posted on the EDUCO site: Each one comes with its own dateline. You must submit the homework before its deadline.

Course Feedback:

TOHONO O'ODHAM COMMUNITY COLLEGE

Homework by sections, chapter tests, practice chapter tests, practice final exam and final exam have been posted on the EDUCO site: www.educosoft.com. All materials submitted will be graded and scores returned immediately after they are submitted. Students can take up to 3 times any homework, test or final exam. Higher score will be recorded. Deadlines is set for every assignment is on the site. Once the assignment expires, it is removed and you cannot continue taking it.

Instructor Withdrawals:

Students who have missed four consecutive classes, not submitted any assignments are assumed NOT to be participating in the class and will be considered or recommended for withdrawal. Students may withdraw from class at any time during the first 2/3rds of the semester without instructor permission and without incurring any grade penalty. Please be sure to withdraw yourself by November 4, 2019, if you do not expect to complete the class; otherwise you may receive an "F" grade (Your success is important).

Incomplete (I) grade:

"I" grades are not awarded automatically. The student must request an "I" from the instructor who will judge the student's ability to complete the course on his or her own. Generally the student must have completed over 80% of the course requirements with at least a "C" grade. An "I" requires a written contract between the student and the instructor listing work to be completed as well as how and when the work will be done. If the work is not completed within the contract period, the "I" grade automatically reverts to an "F." "I" grades will not be re-evaluated during the final two weeks of the semester when class activities are normally at their most intense.

Special Withdrawal (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.

Final Grades: Students will receive a grade transcript from the college mailed to the address given with registration materials at the end of the semester when all grades have been recorded.

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!

TOHONO O'ODHAM COMMUNITY COLLEGE

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 x 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)

TOHONO O'ODHAM COMMUNITY COLLEGE

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	

TOHONO O'ODHAM COMMUNITY COLLEGE

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	

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.