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## Syllabus: ***MAT 151, College Algebra***

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### Course Information

Course Prefix/Number: MAT 151

Credit Hours: 4

Semester: Spring 2020

Course Title: College Algebra

Class Days/Times: *Mon/Wed: 2:30pm-3:45pm*

Room: GSK 1

### Instructor Information:

Name: Dr. Rajneesh Verma

Phone/Voice Mail: 520-383-1114

E-mail: rverma@tocc.edu

Office location: Faculty building, #103

Office hours: Monday 8:30am-12:00pm &

Wednesday 10:30am-12:00pm

**Course Description:** Analysis and interpretation of the behavior and nature of functions including polynomial, rational, exponential, logarithmic, power, absolute value, and piecewise-defined functions; systems of equations, modeling and solving real world problems. Additional topics may include matrices, sequences and series, and conics.

**Student Learning Outcomes:** After the completion of the course the students will be able to

- Students will be able to graph, analyze and perform function operations
- Create mathematical model using variety of functions
- Employ technology to set up and solve real world problems

**Course Structure:** The course is a lecture course, which includes PowerPoint lectures, assigned reading, films, in-class activities, discussions, homework, exams and several quizzes

**Texts and Materials:** The book is College Algebra by Jay Abramson, University of Arizona. A pdf and online version of this book is available online. The link for the same is provided below:

<https://openstax.org/details/books/college-algebra>

**Evaluations and Grading & Assignments:**

90 % and above is an A

80 - 89 % is a B

70 – 79% is a C

60 – 69% is a D

Under 60% is Failing

**Your grade will be determined by the following:**

Title	Total points	Weight (% of total grade)
Attendance	100	5
5 Monthly Quizzes (5x40pts)	200	20
3 Monthly Exams (3x100pts)	300	30
1 Final Comprehensive Exam (1x100pts)	100	30
6 Homework (6x50pts)	300	15

- **Himdag Cultural Component:**

- My interpretation of what Nahban said in the Desert Smells Like Rain is this: while the himdag discourages direct, exact answers, in the mathematical world, one is expected to be able to come up with a precise answer for the situation. That being said, there are a few common issues shared:
- Baban (coyotes) are not going to affect your homework or my tests – they didn't write either.
- While one must go through a maze to see *i'itoi*, there was no mention as to how many mazes there were to get to him. Likewise, you will discover in this course that there are many different ways to perform the algebra necessary to see the final answer.
- *I-we:tma*: for your success and the college's and the community's, you should not go work on mathematics alone – it can be a group activity (except on the tests, of course).
- *T-pik elida*: we respect each other and ourselves. We respect and take pride in our own work. We respect each other's abilities, quirks and privacy.

## **Policies and Expectations:**

### **Course Policies:**

- 1) There is no extra credit work.
- 2) If a student misses class(es) because of absence(s), it is his/her responsibility to catch up and cover the material that was taught during the absence(s).
- 3) Students are expected to stay in class and work diligently throughout the whole time. Sleeping, frequent/continued exiting (more than once) from the class during the class period will constitute one (1) absence.
- 4) No cell phone use is allowed during class. Use of cell phones during class, unless permitted by instructor, is a violation of the T-So: son. You will be given one verbal warning on your first violation and a written one on your second violation. After that administrative action(s) will be taken
- 5) Your behavior in the class will decide weather you will get a recommendation letter or not from me.
- 6) Students are expected to attend each class, arriving on time, except in the case of an excused emergency.
- 7) Students are expected to contact instructor prior to absences, coming late to class or leaving early.
- 8) Unexcused late arrivals or early departures will count against attendance record.
- 9) Class participation and preparation are essential to student success. Students must read textual material, prepare for projects, complete required research as stated on the course schedule.
- 10) Students are expected to come to class prepared for class and having done any preliminary work required as per the course schedule.
- 11) Failure to submit a project results in a grade of zero (0). An F is a better grade!
- 12) No work accepted after the last class

### **Classroom Behavior**

- 1) Visitors may be only allowed at class sessions or on field trips with instructor approval, visitor's safety and behavior are the responsibly of the student.
- 2) Possession of drugs, alcohol or firearms on college property is illegal.
- 3) Food and beverages are allowed in classrooms at discretion of the instructor.
- 4) Cellphones should be turned off during class, unless the instructor is allowing students to use their tools (calculator, internet access).
- 5) Students creating disturbances that interfere with the conduct of the class or the learning of others will be asked to leave.
- 6) Student behavior is also detailed in student handbook under Student Code of Conduct Violations

**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).

**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.

**Make-up policy:**

Late assignments that can be made up will be accepted but may be given half credit.

**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.

**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.
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 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 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.

## **Courses Outline:**

### **I) Functions ( 3<sup>rd</sup>, 4<sup>th</sup> week of Jan & 1<sup>st</sup> week of Feb, 1 HW, 1 Quiz, 1 Exam)**

#### **Definition**

1. By ordered pairs from table or other sources
2. Graphical
3. Algebraical
- 4 Domain and range
5. Determine the domain
6. Determine whether a number is in the range; find the range in other cases
7. Computations
8. Algebra of functions
9. Composite function
10. Find the inverse of a one-to-one function
11. The zeros of functions

### **II) Polynomial and Rational Functions (2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> week of Feb, 2 HW, 2 Quiz, 2 Exam)**

#### **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 (1<sup>st</sup> and 2<sup>nd</sup> week of March, 3 HW, 3 Quiz)**

**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 (3<sup>rd</sup> week of March, 4HW, 3 Exam)**

**A. Solutions**

1. Identify solutions as ordered n-tuples
2. Classify systems as consistent or inconsistent
3. Applications of systems

**V) Sequences and Series (4<sup>th</sup> week of March, 1<sup>st</sup> 2<sup>nd</sup> week of April, 5HW, 4 Quiz)**

**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

**VI) Graphing (3<sup>rd</sup> & 4<sup>th</sup> week of April, 6 HW, Final Exam)**

**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

**iPad Use**

**A. Numerical calculations and evaluation of functions B. Graph and analyze functions**

**C. Matrix computations**

**D. Other applications such as apps**

**Important Dates**

Weekly structure, reading assignments, class projects, due date, exams, etc. details regarding assignments, exams, projects with due dates and any instructions for work.

Make sure that you have one or more learning activities in the calendar/schedule that address each outcome. (An activity can address more than one outcome.)

**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.



## Acknowledgment of Receipt of Syllabus

### Date:

Please read, sign and return the following acknowledgment to me in class, or return to me at the following address:

Dr. Rajneesh Verma  
Tohono O'odham Community College P.O. Box 3129  
Sells, AZ 85634

- I have received my MAT 151 syllabus (including course objectives, policies, requirements and schedule) and have read and understood all the enclosed materials
- I have no objection to receiving an occasional call from the instructor at the number given with my registration materials.
- I prefer that the instructor not call or contact me by phone anytime during the semester.

My reason(s) for taking this course:

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My background in this area includes:

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I would like to be contacted by the instructor regarding the following concerns:

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\_\_\_\_\_ Print Name \_\_\_\_\_ Signature

\_\_\_\_\_ Student ID Number

\_\_\_\_\_ Telephone Number

Current Mailing Address/City/State/Zip E-mail Address

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