



# MTH 103 College Algebra

Niranjana Warnakulasooriya

UNITED TRIBES TECHNICAL COLLEGE

## COURSE INFORMATION

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This course is designed to introduce the learner to critical thinking and problem solving skills in algebraic concepts, relations and functions, equations and inequalities, complex numbers; polynomial, rational, exponential and logarithmic functions and systems of equations.

Credits: 4

Pre/Corequisites:

- Prerequisite: MTH 102 or placement test

## CLASS INFORMATION

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Section Number: MTH 103 A

Term: Fall      Year: 2022      Start Date: 8/23/2022      End Date: 12/9/2022

Meeting Times: MTWR 3:00 - 3:50pm

Delivery Mode: Face to Face

## INSTRUCTOR

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Niranjana Warnakulasooriya

Email: [nwar@uttc.edu](mailto:nwar@uttc.edu)

Office Phone: (701) 221-1495

Mobile Phone: (618) 303-4613

Office Location: Education Building, Room 209

Office Hours:

MTW 1:00 - 3:00pm, Thu 12:00 - 3:00pm, F 11:00am - 12:00pm

## TEXTBOOKS

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**ONLINE COURSE TEXTBOOK:** Sisson. (2019). *College Algebra: concise approach text with access*. Mount Pleasant, SC: Hawkes Learning System. ISBN 13: 9781642771732.

**FACE-TO-FACE COURSE TEXTBOOK:** Sisson, P. (2021). *College algebra* (3rd ed.). Hawkes Learning. ISBN: 9781642771695

## INSTITUTIONAL LEARNER OUTCOMES

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Critical Thinking: Employ critical thinking skills in the processes used to identify and solve problems.

Quantitative & Scientific Reasoning: Develop solutions to mathematical and scientific problems.

## COURSE OBJECTIVES

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1. Manipulate relations and functions
2. Simplify equations and inequalities
3. Calculate with complex numbers
4. Manipulate rational and polynomial expressions
5. Compute exponential and logarithmic functions
6. Solve systems of linear equations
7. Use matrices to solve problems

## GRADING INFORMATION

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|           |      |
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| Tests (3) | 50%  |
| Homework  | 30%  |
| Quizzes   | 20%  |
| Total     | 100% |

## A. GRADING SCALE

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| Grade | Percentage |
|-------|------------|
| A     | 90-100%    |
| B     | 80-89%     |
| C     | 70-79%     |
| D     | 60-69%     |
| F     | Below 60%  |

## B. COMMUNICATION

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Email is the official means of communication at UTTC. Information Technology (IT) will assign all students an official UTTC email address. All correspondence from the College to the student will be sent to the student's UTTC email address. Students are expected to check their email regularly and are responsible for all information sent to them via their UTTC email address. Faculty expect students to use their official email address for all instructional purposes, including communicating with the faculty.

## C. ATTENDANCE

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Students at UTTC are expected to participate in all of their class sessions and are expected to communicate with their instructors regarding any emergencies that cause them to miss class. Regardless of the circumstances, the student is responsible for obtaining any information missed because of the absence and completing any outstanding assignments. The student may refer to the course assignments in [My.UTTC.edu](http://My.UTTC.edu), contact another student enrolled in the course, or meet with the course instructor during office hours to get the missing information. Attendance is entered as “Present”, “Absent-Unexcused”, or “Excused” (college-sanctioned absences).

## **SUMMIT PARTICIPATION**

All UTTC students attend the United Tribes Technical College Tribal Leaders Summit in September 6 - 8, 2022 at the Bismarck Event Center. Students are expected to be at the Summit Tuesday - Thursday. Transportation to and from the campus will be provided. Sign-in sheets will be available at the registration tables for all students to sign upon arrival and again at departure. At the conclusion of the Tribal Leaders Summit, the student is expected to write an essay on how the session presentation connected to the UTTC Events Week theme. Include the title of the sessions attended, the names of the presenters, a brief description of the content presented in each session, the presenter style, and how the sessions connected to the theme. Visiting the exhibit hall can be included as a session. The essay is considered an assignment for each one of the students' courses and is recorded as either points or a letter grade. One reflection paper can be submitted for multiple courses.

## **D. LATE ASSIGNMENT SUBMISSIONS**

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UTTC supports and fosters the student's responsibility for completing and submitting assignments on or before scheduled due dates and times. If an assignment is due, the student should make every effort to submit the assignment on time. Occasionally, a student may experience an unexpected life event that results in the submission of late work. Communication is the key. Instructors are more than willing to work with students in the event of an emergency if the student communicates with them before the date and time the assignment is due to make other arrangements.

If the student didn't communicate, 10% of the total grade will be deducted per each late day. Assignments not submitted by the initial deadline date will be reflected in the course gradebook as a zero (0) until the assignment has been submitted. The amount of points deducted for late work is at the discretion of the instructor. Assignments submitted via E-mail will not be accepted under any circumstances and will receive a grade of zero.

## **E. MISSED TEST, EXAMS AND QUIZZES (FORMAL ASSESSMENTS)**

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Students may not make up a missed test, exam, or quiz without a **valid documented reason** for their absence (illness, family emergency). It is the student's responsibility to contact their instructors before the absence, or within 24 hours after missing the formal assessment. The instructor will review the reason the student missed and determine if the circumstance justifies the student being allowed to take the formal assessment. Approved make-up assessments must be taken outside of the student's regular class schedule and during a time and location agreed upon between the student and instructor. Students are not to miss another class in order to make-up an assessment for another course. If the student fails to show on the date and time of the makeup assessment, the student will not be permitted to reschedule the makeup and the assessment and will earn a 0% grade.

## **F. EARLY ALERT SYSTEM**

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UTTC's Early Alert System (EAS) is a proactive, communication driven support system that provides timely identification and interventions to work with individual students to assist in generating plans to overcome challenges to college

success. The system assists UTTC students by linking them to faculty and staff who can provide and connect students to available resources and strategies. The early alert serves as an opportunity for students to take ownership of their success and empower them to accomplish academic and personal goals. The system helps faculty and academic advisors connect and communicate with students as issues arise. The additional cross-wide partnerships create a culture of collaboration focused upon the best interest of UTTC students.

Academic related concerns such as attendance, missing assignments, or classroom behavior will result in an early alert being issued by faculty. When an early alert is issued, the student will receive an email requesting them to make arrangement to follow up with the instructor and/or their academic advisor. Students receiving an early alert should make the necessary arrangements to set up and meet with faculty as soon as possible to generate a plan of success.

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## **G. ACADEMIC HONESTY**

Students are expected to complete their own work. Academic dishonesty includes plagiarism; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using course materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to dishonestly obtain grades, honors, awards, or professional endorsement; altering, forging, misrepresenting, or misusing an academic record; or fabricating or falsifying data, research procedures, or data analysis. Refer to [Academic Affairs policies](#) and procedures handbook for further information.

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## **H. STUDENTS WITH DISABILITIES**

United Tribes Technical College recognizes its responsibility for making reasonable accommodations to ensure there is no discrimination on the basis of a disability. The Disabilities Services Office coordinates reasonable accommodations, support services, and appropriate referrals for the purpose of removing barriers and providing an equitable learning environment. If you have a disability, please contact the [Disabilities Services \(DS\)](#) office at (701) 221-1516 or email at [dss@uttc.edu](mailto:dss@uttc.edu).

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## **I. TITLE IX STATEMENT**

Title IX is a federal civil rights law that prohibits discrimination on the basis of sex, including sexual harassment, rape and sexual assault. United Tribes Technical College is committed to upholding the law and standards that promote respect and human dignity in a safe environment. Sexual misconduct and relationship violence in any form violates UTTC's mission, cultural values, Student Code of Conduct, and may also violate federal and state law. If you or someone you know has been impacted by sexual assault, dating and domestic violence, stalking, or sexual exploitation, UTTC has resources available on the [Title IX website](#). you can find the appropriate resources on the UTTC campus and in the community

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## **J. DIVERSITY AND EQUITY STATEMENT**

United Tribes Technical College values diversity because it enriches the community and wealth of experiences that characterize a post-secondary education. Our students, faculty, and staff come from Tribal lands throughout the United States and Canada. The majority of our students come from the northern plains region of the country, with 70% representing the North Dakota tribes.

UTTC recognizes that diversity is about much more than race, ethnicity or geography. Because students from many Tribal nations are represented at UTTC, from a wide range of cultural and ethnic backgrounds, students are encouraged to share their own cultural practices, traditions, and beliefs in the classroom in an effort to build an inclusive and welcoming community for all individuals and one from which we can learn from one another. We believe engagement with diverse perspectives and ideas is critical to the education and growth of all people, and we value the unique experiences and viewpoints of all of our community members.

### EQUITY STATEMENT

United Tribes Technical College (UTTC) believes that access to a high-quality education in an inclusive environment is the right of all individuals and imperative for the continued advancement of a strong democracy and workforce. Equity is ensuring that all students receive what they need to be successful through the intentional design of the college experience.

### K. TECHNOLOGY REQUIREMENTS

To ensure that you are using the recommended personal computer configurations, please refer to the [minimal technology requirements](#).

### COURSE CALENDAR

| Module/Week          | TOPICS COVERED   | Support Materials, Book chapters, etc. | Assessment (Formative – Summative) |
|----------------------|--|--|------------------------------------|
| 1<br>Aug 23 - 26     | Review: MTH 102 (Intermediate Algebra)<br>1.1: The Real Number System<br>1.2: The Arithmetic of Algebraic Expressions                | Chapter 1                              | HW 1                               |
| 2<br>Aug 29 – Sept 2 | 1.3: Properties of Exponents<br>1.4: Properties of Radicals<br>1.5: Polynomial<br>1.6: Polynomial Factoring                          | Chapter 1                              | HW 2, Quiz 1                       |
| 3<br>Sept 5 - 9      | *No School 9/5 or 9/9 Labor Day & Powwow   | Chapter 1,2                            | HW 3                               |
|                      | 1.7: Rational Expressions<br>1.8: Complex Numbers<br>2.1 Linear Equations in One Variable<br>2.2 Linear Inequalities in One Variable |  |                                    |
| 4<br>Sept 12 -16     | *No School 9/12 Founders Day   | Chapter 2                              | HW 4, Quiz 2                       |
|                      | 2.3 Quadratic Equations in One Variable<br>2.4 Higher Degree Polynomial Equations<br>2.5 Rational Expressions and Equations          |  |                                    |

|                      |   |           |               |
|----------------------|---|-----------|---------------|
|                      | 2.6 Radical Equations   |           |               |
| 5<br>Sept 19 - 23    | 3.1 The Cartesian Coordinate System<br>3.2 Circles<br>3.3 Linear Equations in Two Variables   | Chapter 3 | HW 5          |
| 6<br>Sept 26 - 30    | 3.4 Slope and Forms of Linear Equations<br>3.5 Parallel and Perpendicular Lines<br>3.6 Linear Inequalities in Two Variables                   | Chapter 3 | HW 6          |
| 7<br>Oct 3 - 7       | 4.1 Relations and Functions<br>4.2 Linear Functions<br>4.3 Quadratic Functions  | Chapter 4 | HW 7, Quiz 3  |
| 8<br>Oct 10 - 14     | *No School 10/10 Indigenous Day   |           | Test 1        |
|                      | Midterm Grades Due 10/14  |           |               |
|                      | Test 1 review   |           |               |
| 9<br>Oct 17 - 21     | 4.4 Other Common Functions<br>4.5 Variation and Multivariable Functions<br>4.6 Mathematical Models  | Chapter 4 | HW 8, Quiz 4  |
| 10<br>Oct 24 - 28    | 5.1 Transformations of Functions<br>5.2 Properties of Functions   | Chapter 5 | HW 9          |
| 11<br>Oct 31 – Nov 4 | 5.3 Combining Functions<br>5.4 Inverses of Functions  | Chapter 5 | HW 10, Quiz 5 |
| 12<br>Nov 7 - 11     | *No School 11/11 Veterans   | Chapter 6 | HW 11         |
|                      | 6.1 Polynomial Functions and Polynomial Inequalities  |           |               |
|                      | 6.2 Polynomial Division and the Division Algorithm  |           |               |
| 13<br>Nov 14 - 18    | 6.3 Locating Real Zeros of Polynomial Functions<br>6.4 The Fundamental Theorem of Algebra<br>6.5 Rational Functions and Rational Inequalities | Chapter 6 | HW 12, Quiz 6 |
| 14<br>Nov 21 - 25    | *No Afternoon Classes 11/23   | Chapter 7 | HW 13         |
|                      | *No School 11/24, 11/25 Thanksgiving  |           |               |
|                      | 7.1 Exponential Functions and Their Graphs  |           |               |
|                      | 7.2 Exponential Models<br>7.3 Logarithmic Functions and Their Graphs  |           |               |
| 15<br>Nov 28 – Dec 1 | 9.1 Solving Systems of Linear Equations by Substitution and Elimination<br>9.2 Matrix Notation and Gauss-Jordan Elimination                   | Chapter 9 |               |
| 16<br>Dec 5 - 9      | Final Test Review   |           | Test 2        |
| GRADES DUE           | Grades DUE December 12th  |           |               |