

**Tennessee Technological University
Mathematics Department**

MATH 1000: Transitional Algebra

I. COURSE DESCRIPTION FROM CATALOG:

Exponents and roots; polynomial, rational, radical, and absolute value expressions; factoring; linear equations and inequalities; quadratic equations; graphing; functions

This course counts as 3 credits of load for student financial aid and quality point average considerations. It may not be used to satisfy any graduation requirements in any degree program. Lec. 2. Lab. 2. Cr. 3.

II. PREREQUISITE(S):

ACT mathematics score greater than or equal to 19; or a Compass score of greater than or equal to 28; or, completion of Learning Support Mathematics Competencies 1 thru 5, or equivalent.

III. COURSE OBJECTIVE(S):

This course seeks to promote the use and understanding of the language of algebra, as well as to provide an understanding of algebraic methods and logical thinking critical so success in MATH 1130 College Algebra, MATH 1410 Survey of Elementary Mathematics, and MATH 1710 Pre-Calculus I.

IV. STUDENT LEARNING OUTCOMES:

Upon successful completion of this course the student will recognize and interpret graphs of basic linear and non-linear functions; solve linear and quadratic equations and inequalities both algebraically and numerically; manipulate expressions involving appropriate operations on rational, irrational and complex numbers.

V. TOPICS TO BE COVERED:

(order may vary depending upon appropriate progression of topics)

1. Graphing and Functions
 - a. The Rectangular Coordinate System and Relations
 - b. Functions
 - i. Definition
 - ii. Notation
 - iii. Domain and Range
 - iv. Graphing Basics
 - c. Graphing Linear Equations in Function Notation
 - d. Graphing Linear Inequalities
 - e. Slope
 - i. Average Rates of Change
 - ii. Difference Quotient
 - f. Equations of Lines

- g. Parallel and Perpendicular Lines
- 2. Polynomials
 - a. Integer Exponents
 - b. Polynomials
 - i. Definition
 - ii. Addition and Subtraction of Polynomials
 - iii. Multiplying of Polynomials
- 3. Factoring Polynomials
 - a. Greatest Common Factor
 - b. Factoring Trinomials
 - c. Factoring by Grouping
 - d. Special Factorization Rules
 - i. Difference of two Squares
 - ii. Sum and Difference of two Cubes
- 4. Quadratic Functions
 - a. Definition of a Quadratic
 - b. Solving a Quadratic Equation by Factoring
 - c. Solving a Quadratic Equation by Extracting Square Roots
 - d. Solving a Quadratic Equation by Completing the Square
 - e. Solving a Quadratic Equation by the Quadratic Formula
 - f. Characteristics of the Graph of a Quadratic Function
 - g. Writing a Quadratic Function in Vertex Form, $F(x)=a(x-h)^2+k$
 - h. Finding the vertex with the Vertex Formula, $(-b/2a, f(-b/2a))$
 - i. Graphing a Quadratic Function
 - j. Relation between the graph of a Quadratic Function and the solutions of a Quadratic Equation
- 5. Rational Expressions
 - a. Negative Exponents
 - b. Definition of a Rational Expression
 - c. Domain
 - d. Simplifying Rational Expressions
 - e. Multiplying and Dividing Rational Expressions
 - f. Adding and Subtracting Rational Expressions
 - g. Simplifying Complex Fractions
- 6. Radical Expressions
 - a. Definition of a Radical
 - b. Domain
 - c. Simplifying Radicals
 - d. Adding and Subtracting Radicals
 - e. Multiplying and Dividing Radicals

VI. ADDITIONAL INFORMATION:

This course will **NOT** be submitted for approval to the University General Ed Committee to satisfy the minimum general education requirements in mathematics.

VII. POSSIBLE TEXTS AND REFERENCES:

Algebra for College Students, by D. Franklin Wright

VIII. ANY TECHNOLOGY THAT MAY BE USED:

MyMathLab, Aleks, WebAssign, HawkesLearning System, or similar online homework system may be utilized.

IX. STUDENT ACADEMIC MISCONDUCT POLICY:

Maintaining high standards of academic integrity in every class at Tennessee Tech is critical to the reputation of Tennessee Tech, its students, alumni, and the employers of Tennessee Tech graduates. The Student Academic Misconduct Policy describes the definitions of academic misconduct and policies and procedures for addressing Academic Misconduct at Tennessee Tech. For details, view the Tennessee Tech's Policy 217 – Student Academic Misconduct at [Policy Central](#).

X. DISABILITY ACCOMMODATION:

Students with a disability requiring accommodations should contact the Office of Disability Services (ODS). An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The ODS is located in the Roaden University Center, Room 112; phone 372-6119. For details, view the Tennessee Tech's Policy 340 – Services for Students with Disabilities at [Policy Central](#).