

DELAWARE TECHNICAL & COMMUNITY COLLEGE  
COLLEGEWIDE COURSE SYLLABUS



**Campus:** Terry

**Department:** Mathematics

**Course Number and Title:** MAT 181 – Algebra and Trigonometry I

**Instructor Name:**

**Telephone:**

**E-mail:**

**Prerequisites:** MAT 015 or required math score on College Placement Test

**Corequisites:** None

**Course Hours and Credits:** 4:0:4

**Course Description:** A study of elementary functions including linear functions, quadratic functions, polynomial functions, exponential and logarithmic functions and right triangle trigonometry.

**Required Text:** Aufmann, Richard N., Barker, Vernon C., and Nation, Richard D. (2005). College Algebra and Trigonometry. (5<sup>th</sup> ed.)Houghton Mifflin Company.

**Materials:** A graphing calculator is required.  
The following models are acceptable:  
TI-83, TI-84, TI-85, TI 86, TI-89, TI-92  
Hp 48G, HP 48GX, HP 49G  
Graph paper  
Straight edge/ruler

**Method of Instruction:** Lecture

**Manuals:** None

**Disclaimer:** None

## **CORE COURSE PERFORMANCE OBJECTIVES**

The student will be able to:

1. Use graphical and algebraic methods to solve problems of application involving linear functions. (CCC 2, 7)
2. Solve problems of application involving quadratic functions and their graphs. (CCC 2, 7)
3. Solve problems of application involving polynomial functions and their graphs. (CCC 2, 7)
4. Use graphical and algebraic methods to solve problems of application involving exponential and logarithmic functions. (CCC 2, 7)
5. Solve problems of application applying right triangle trigonometry. (CCC 2, 7)

## **MEASURABLE PERFORMANCE OBJECTIVES**

1. **Use graphical and algebraic methods to solve problems of application involving linear functions. (CCC 2, 7)**
  - 1.1 Solve equations.
  - 1.2 Solve applications of equations.
  - 1.3 Find solutions of linear systems.
  - 1.4 Solve inequalities.
  - 1.5 Graph equations on the Cartesian coordinate system.
  - 1.6 Find all symmetries for given functions.
  - 1.7 Define and graph function.
  - 1.8 Perform basic operations on functions.
  - 1.9 Find the inverse of a function.
  - 1.10 Solve applications involving functions.
2. **Solve problems of application involving quadratic functions and their graphs. (CCC 2, 7)**
  - 2.1 Define and perform basic operations on complex numbers.

- 2.2 Solve quadratic equations.
  - 2.3 Graph equations that are not quadratic.
  - 2.4 Solve applications of quadratic equations.
  - 2.5 Solve rational inequalities.
- 3. Solve problems of application involving polynomial functions and their graphs. (CCC 2, 7)**
- 3.1 Review the real number system.
  - 3.2 Define and use absolute value.
  - 3.3 Perform basic operations on polynomials.
  - 3.4 Review the principles of factoring polynomials.
  - 3.5 Review fractional expressions.
  - 3.6 Review the laws of exponents and scientific notation.
  - 3.7 Perform basic operations on radicals.
  - 3.8 Use root theory and synthetic division to find roots of polynomials.
  - 3.9 Solve problems using remainder and factor theorems.
  - 3.10 Find the real, complex and rational zeros of polynomial functions.
  - 3.11 Solve maximum and minimum application problems.
  - 3.12 Identify domain, range and all asymptotes of rational expressions.
  - 3.13 Decompose rational expressions into partial fractions.
- 4. Use graphical and algebraic methods to solve problems of application involving exponential and logarithmic functions. (CCC 2, 7)**
- 4.1 Graph exponential and logarithmic functions.
  - 4.2 Solve exponential equations.
  - 4.3 Identify definition and properties of logarithmic functions.

- 4.4 Solve logarithmic equations.
- 4.5 Solve applications of exponential and logarithmic functions.
- 5. **Solve problems of application applying right triangle trigonometry. (CCC 2, 7)**
  - 5.1 Define properties of angles.
  - 5.2 Solve basic problems using right triangle trigonometry.

### **EVALUATION CRITERIA**

Students will demonstrate proficiency on all Measurable Performance Objectives at least to the 75% level. The final grade will be determined using College Grading System:

92 – 100	A
83 – 91	B
75 – 82	C
0 – 74	R

**Students should refer to the Student Handbook for information on Academic Standing Policy, Academic Honesty Policy, Students Rights and Responsibilities and other policies relevant to their academic progress.**

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