

DELAWARE TECHNICAL & COMMUNITY COLLEGE  
COLLEGEWIDE COURSE SYLLABUS



<b>Campus:</b>	Terry	
<b>Department:</b>	Mathematics	
<b>Course Number and Title</b>	MAT 153 – College Math & Statistics	
<b>Instructor Name:</b>	<b>Telephone:</b>	<b>E-mail:</b>
<b>Prerequisites:</b>	MAT 015 or required math score on College Placement Test	
<b>Corequisites:</b>	None	
<b>Course Hours and Credits:</b>	4:0:4	
<b>Course Description:</b>	A study of exponents, radicals, quadratic equations, relations and functions, graphing, polynomial functions, systems of equations, inequalities, exponential and logarithmic functions, elementary statistics including organizing and presenting data, measures of central tendency and measures of variation.	
<b>Required Text:</b>	Lial, M.L., Hungerford, T.W. (2002). <u>Mathematics with Applications</u> (8 <sup>th</sup> ed.) New York, NY: Harper Collins.	
<b>Materials:</b>	TI-83/84 or better graphing calculator Graph paper Straight-edge or ruler	
<b>Method of Instruction:</b>	Lecture	
<b>Manuals:</b>	None	
<b>Disclaimer:</b>	None	

## CORE COURSE PERFORMANCE OBJECTIVES

The student will be able to:

1. Perform basic operations involving exponents and radicals. (CCC 7)
2. Solve quadratic equations. (CCC 7)
3. Perform operations involving functions. (CCC 7)
4. Graph polynomial functions. (CCC 7)
5. Solve systems of linear equations and inequalities. (CCC 7)
6. Solve application problems involving exponential and logarithmic functions. (CCC 2, 7)
7. Compute, analyze and interpret statistical data. (CCC 2, 6, 7)

## MEASURABLE PERFORMANCE OBJECTIVES

The student will be able to:

1. **Perform basic operations involving exponents and radicals. (CCC 7)**
  - 1.1 Define, describe, and graph the following sets:
    - a. Natural numbers
    - b. Integers
    - c. Rational numbers
    - d. Irrational numbers
    - e. Real numbers
  - 1.2 Use the order of operations to perform basic operations on the real numbers.
  - 1.3 Find the absolute value of a real number.
  - 1.4 Perform operations involving basic definitions and properties of exponents and radicals.
  - 1.5 Convert from rational exponents to radicals and vice-versa.
  - 1.6 Simplify radicals and expressions involving radicals.
2. **Solve quadratic equations. (CCC 7)**
  - 2.1 Factor trinomials and special products.
  - 2.2 Solve quadratic equations by factoring, completing the square, and by using the quadratic formula.

2.3 Graph quadratic functions and find the minimum or maximum value in application problems.

**3. Perform operations involving functions. (CCC 7)**

3.1 Define and give examples of:

- a. Functions
- b. Relations
- c. Domain
- d. Range

3.2 Identify graphs and equations that represent functions.

3.3 Perform specific operations on polynomials.

3.4 Evaluate a function at a given point.

3.5 Use the slope-intercept and the point-slope formulas to determine the equation of a line.

**4. Graph polynomial functions. (CCC 7)**

4.1 Solve and graph absolute value equations and inequalities.

4.2 Graph linear functions.

4.3 Find the slope of a line between two points or by examining the equation of a line.

4.4 Sketch the graphs of polynomial functions.

**5. Solve systems of linear equations and inequalities. (CCC 7)**

5.1 Solve for the solution set of an equation or an inequality in one variable; also, graph for specific solution sets.

5.2 Solve and graph absolute value equations and inequalities.

5.3 Given sets of values satisfying linear functions, determine the function, and use that function to interpolate and extrapolate information.

5.4 Solve application problems involving linear functions including marginal cost and break-even analysis.

- 5.5 Solve systems of linear equations and inequalities by any/all of the following methods:
- a. Graphing
  - b. Addition/subtraction
  - c. Elimination
  - d. Matrices
  - e. Substitution

**6. Solve application problems involving exponential and logarithmic functions. (CCC 2, 7)**

- 6.1 Solve applications problems including supply and demand problems.
- 6.2 Graph exponential functions.
- 6.3 Use exponential functions to predict future amounts from growth functions.
- 6.4 Convert exponential functions to logarithmic functions and vice-versa.
- 6.5 Find a logarithm of a number.
- 6.6 Simplify and expand logarithmic expressions by using the basic laws for logarithms.
- 6.7 Solve exponential and logarithmic equations.

**7. Compute, analyze and interpret statistical data. (CCC 2, 6, 7)**

- 7.1 Arrange raw data into a frequency distribution.
- 7.2 Graph frequency distributions into histograms, frequency polygons, and ogives.
- 7.3 Find the mean and mode of grouped and ungrouped data.
- 7.4 Find the median of ungrouped data.
- 7.5 Calculate the sample standard deviation of grouped and ungrouped data.

**EVALUATION CRITERIA**

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