Northwestern Connecticut Community College
Course Syllabus

Course Title: Precalculus   **Course #:** MAT* 186

Course Description: 4 credits
An exploration of functions and their graphs. Polynomial, rational, exponential, logarithmic, and trigonometric functions and their behaviors in a two-dimensional graphing system will be examined and used to model real life situations. The use of a graphing calculator is an integral part of this course.

Pre-requisite: C or better in Math 137 or equivalent.

Goals:
1. To enhance and solidify students' knowledge of concepts learned in previous mathematics courses.
2.   To provide students with the mathematical tools necessary to pursue the study of calculus and other advanced math courses, and to represent functions both algebraically and graphically using a technology tool.
3. To use technology tools to analyze and apply functions to real world situations.

Outcomes: Upon completion of this course, the students will have demonstrated his/her ability to:

1.   Use slope and other linear attributes to analyze and graph linear functions.
2.   Apply the Distance and Midpoint Formulas.
3.   Identify various functions and use transformations to create new functions.
4.   Use composition and the algebra of functions to combine functions
5.   Find the inverse of a function
6.   Perform basic operations with complex numbers.
7.   Identify, solve and graph quadratic functions and equations.
8.   Divide polynomials and utilize the Remainder and Factor Theorems
9.   Find the zeros of polynomial functions
10.   Simplify, analyze, and graph rational functions and inequalities
11.   Simplify, analyze, and graph exponential and logarithmic functions
12.   Utilize properties of logarithms to simplify exponential and logarithmic equations
13.   Define and evaluate trigonometric functions using the unit circle and right triangle trigonometry
14.   Graph and transform all six trigonometric functions
15.   Find the inverse of a trigonometric function
16.   Verify trigonometric identities
17.   Apply the Sum and Difference and Half and Double Angle Formulas
18.   Solve trigonometric equations
19.   Apply the Law of Sines and the Law of Cosines
20.   Transform rectangular coordinates to polar coordinates and vice versa *
21.   Sketch simple polar graphs *

* *Will cover these topics if time allows. Otherwise, these will be covered in MAT 256: Calculus II*