DISTANCE CALCULUS @ Suffolk UNIVERSITY

COURSE SYLLABUS

Course: Precalculus Mathematics
Number: Math 121 XH
Units: 3 Units

Course Description: A review of topics in algebra, trigonometry and analytic geometry intended for students needing one additional semester of preparation before taking calculus.

Prerequisite: At least 3 years of high school mathematics. 1 term - 3 credits

Detailed Syllabus:

0. Getting Started
    1. Email and Chat
    2. Learning About the Course
    3. Required Hardware
        i. Relatively new computer (Windows XP or Mac OSX 10.3 or higher)
        ii. USB scanner
        iii. Adjustable Webcam
        iv. High-speed internet connection
    4. Software
        i. LiveMath Maker
        ii. QuickTime/iTunes

1. The Big Picture
    1. Solving (easy) equations in 1 variable.
    2. What if you can't solve for x?
    3. Finding solutions numerically
    4. Finding solutions graphically
    5. Solving equations of more than 1 variable

2. Functions
    1. Function notation.
    2. Data sets
    3. Graphing functions
    4. Data sets and smooth curves
    5. Domain and Range
    6. Algebraic combinations of functions

3. Linear Functions
    1. Algebraic definition
    2. Slope

3. Graphing linear functions by hand
4. Properties of linear functions
5. Linear data sets

4. Quadratic Functions
    1. Algebraic definition
    2. Graphing and Properties of Quadratic Functions
    3. Solving quadratic equations algebraically: Factoring
    4. Solving quadratic equations algebraically: Quadratic formula
    5. Solving quadratic equations numerically and graphically
    6. Complex Numbers
    7. Quadratic data sets

5. Power and Polynomial Functions
    1. Algebraic definition
    2. Graphing and Properties of Polynomial Functions
    3. Solving polynomial equations algebraically: factoring
    4. Solving polynomial equations numerically and graphically
    5. Fundamental Theorem of Algebra
    6. Radicals and fractional exponents

6. Rational Polynomial Functions
    1. Algebraic definition
    2. Graphing and Properties of Rational Polynomial Functions
    3. Solving rational polynomial equations algebraically: factoring
    4. Solving rational polynomial equations numerically and graphically

7. Inequalities, Systems of Equations
    1. Inequalities of 1 variable
    2. Inequalities of 2 variables
    3. System of Equations in 2 variables

8. Exponential Functions
    1. Algebraic definition
    2. Graphing and Properties of Exponential Functions
    3. Solving exponential equations numerically and graphically
    4. Exponential Growth and Applications
    5. Data sets and exponential functions.

9. Logarithmic Functions
    1. Inverse Functions
    2. Algebraic Definition
    3. Graphing and Properties of Logarithmic Functions
    4. Solving exponential and logarithmic equations algebraically
    5. Solving logarithmic equations numerically and graphically

10. Trigonometry
    1. Geometry of Right Triangles
    2. The Unit Circle
    3. The (Circular) Trigonometric Functions

4. Graphing and properties of trigonometric functions: frequency, amplitude, shifting
5. Radians and degrees
6. Trigonometric identities
7. Inverse Trigonometric functions
8. Solving Trigonometric equations algebraically
9. Solving Trigonometric equations graphically and numerically
10. Applications of trigonometry
11. Laws of sines and cosines

11. Analytic Geometry
    1. The Cone
    2. Parabolae, Hyperbolae, Ellipsi