# MTED 613
# Mathematical Modeling for Middle School Teachers

## Course Outline

| Topics | | # of Weeks |
|---|---|---|
| Chapter 1: | **Functions and Graphs:** Cartesian Coordinate System, Using Graphing Utilities, Functions, Functions: Graphs and Properties, Functions: Graphs and Transformations | 4.0 |
| Chapter 2: | **Linear and Quadratic Functions:** Linear Functions, Linear Equations and Inequalities, Quadratic Functions, Complex Numbers, Quadratic Equations and Inequalities, Additional Equation Solving Techniques | 3.0 |
| Chapter 3: | **Polynomial and Rational Functions:** Polynomial Functions, Finding Rational Zeros of Polynomials, Approximating Real Zeros of Polynomials, Rational Functions | 3.0 |
| Chapter 4: | **Inverse Function; Exponential and Logarithmic Functions:** Operations on Functions; Composition, Inverse Functions, Exponential Functions, The Exponential Function with Base e, Logarithmic Functions, Common and Natural Logarithms, Exponential and Logarithmic Equations | 3.0 |
| Tests: | | 1.0 |

**Course Objectives:**

The course is intended to give students a thorough understanding of the prerequisite topics needed in order to learn Calculus. The appropriate use of handheld technologies is stressed throughout the course. Internet resources for students to access outside of class have been included.

When completing this course, it is expected that

- Students will be able to represent functions verbally, algebraically, numerically and graphically and be able to convert from one representation to another.
- Students will be able to identify and explain the characteristics and behavior of functions.
- Students will use mathematics to model real-world phenomena.
- Students will be able to set up functions and use them to solve real-world problems.

**Textbook:**      Precalculus - A Graphing Approach, by Barnett, Ziegler, & Byleen

**Text Website:**      http://www.mhhe.com/math/precalc/barnettpc2/student/olc/index.htm

Adopted: Spring, 2007