Honors Pre-Calculus
School Year 2014-2015

Course Description:
This course is geared for the advanced student in mathematics, and will build on previously learned algebraic and geometric concepts. Topics covered include linear, polynomial, rational, exponential and logarithmic functions, and their graphs; and an in depth look at systems of equations, matrices and determinants. The six trigonometric functions with their relation to the unit circle, and fundamental trigonometric identities and formulas will be covered in detail. Topics in analytic geometry covering conics and polar coordinates, as well as sequences and series will be investigated. A TI-83/84/n-spire graphing calculator is required for this course.

Course Content:
1. Functions and Their Graphs
§ Analyzing Graphs of Functions
§ Shifting, Reflecting and Stretching Graphs
§ Combination of Functions
§ Inverse Functions
2. Polynomial And Rational Functions
§ Quadratic Functions
§ Polynomial Functions of Higher Degree
§ Polynomial and Synthetic Division
§ Complex Numbers
§ Zeros of Polynomial Functions
§ Rational Functions
§ Partial Fractions
3. Exponential and Logarithmic Functions
§ Exponential Functions and Their Graphs
§ Logarithmic Functions and Their Graphs
§ Properties of Logarithms
§ Exponential and Logarithmic Equations
§ Exponential and Logarithmic Models
4. Systems of Equations
§ Solving Systems of Equations
§ Two-Variable Linear Systems
§ Multivariable Linear Systems
5. Matrices and Determinants
§ Matrices and Systems of Equations
§ Operations with Matrices
§ The Inverse and Determinant of a Square Matrix
§ Applications of Matrices and Determinants
6. Trigonometry
§ Radian and Degree Measure
§ Trigonometric Functions: The Unit Circle

§ Right Triangle Trigonometry
§ Trigonometric Functions of Any Angle
§ Graphs of Trigonometric Functions
§ Inverse Trigonometric Functions
7. Analytic Trigonometry
§ Using Fundamental Identities
§ Verifying Trigonometric Identities
§ Solving Trigonometric Equations
§ Sum and Difference Formulas
§ Multiple-Angle Formulas
8. Additional Topics in Trigonometry
§ Law of Sines
§ Law of Cosines
§ Vectors in a Plane
§ Vectors and Dot Products
§ Trigonometric Form of a Complex Number
9. Topics in Analytic Geometry
§ Conics: Parabolas, Ellipses and Hyperbolas
§ Polar Coordinates
§ Graphing Polar Equations
10. Sequences and Series
§ Sequences and Series
§ Arithmetic Sequences and Partial Sums
§ Geometric Sequences and SeriesDelineate major units of study here.

Required Textbooks and/or Other Reading/Research Materials

Precalculus, Fifth Edition Houghton Mifflin, copyright 2001
TI-83/84/n-spire graphing calculator supplied by student

Course Requirements:

Each student is required to complete all summative and alternative assessments, classwork, and homework assignments. Failure to do so will adversely affect the student's overall grade. All students are required to have a TI-83 or TI-84 or TI-n-spire graphing calculator.

Grade Components/Assessments:

Grades will be based on a category-weighted system that will have the following percentages to assess and evaluate student performance.

Assessments: 80%
Homework: 10%
Classwork/Participation: 10%

Alternative assessments include projects, graphing calculator activities, and oral presentations of key concepts. Based on our mission of giving every student a chance to reach his/her fullest potential, students will be allowed to make up work missed due to excused absences as stated in

the student handbook and are encouraged to get additional help whenever necessary for better understanding of class concepts.

Each marking period and final exam are worth 20% of a student's overall average.

Each marking period is worth 20% of a student's overall grade. The final is worth 20% of a student's overall average:

Quarter 1	20%
Quarter 2	20%
Quarter 3	20%
Quarter 4	20%
Final	**20%**

Required Summer Reading/Assignments:

Students are required to get the textbook and complete the assigned review problems for Algebra II listed on the instructor's website. Students will be tested on this material during the first few days of the course to evaluate their preparedness for Honors Pre-Calculus.