

Course Syllabus

1. Title – Pre-Calculus – Honors
2. Text – *Precalculus: Graphical, Numerical, Algebraic*. (Boston: Addison Wesley. Demana Waits, Foley, and Kennedy. 2007)
3. Prerequisites - Algebra II - Honors with a C or higher, Algebra II - Standard with an A, Statistics – Standard with a B or higher, or consent of department
4. Course Description

Pre-Calculus is a two-semester course with a review of advanced algebra and trigonometry. Since functions are the foundations of calculus, this course has been specifically designed to give the student an understanding of the so-called elementary functions. Thus polynomial, rational, exponential, logarithmic, and trigonometric (or circular) functions, as well as some of their properties, are discussed in detail. Other topics include: conics, permutations, combinations, binomial theorem, probability, vectors, polar coordinates and an intuitive concept of limits. Technology such as the TI-Nspire will be used to enhance student learning.
5. Course Content
 - a. Semester 1
 - i. Chapter 1 – Functions and Graphs
 - ii. Chapter 2 – Polynomial, Power, and Rational Functions
 - iii. Chapter 3 – Exponential and Logarithmic Functions
 - iv. Chapter 4 – Trigonometric Functions
 - b. Semester 2
 - i. Chapter 5 – Analytic Trigonometry
 - ii. Chapter 6 – Applications of Trigonometry
 - iii. Chapter 7 – Systems and Matrices
 - iv. Chapter 8 – Analytic Geometry
 - v. Chapter 9 – Discrete Mathematics
 - vi. Chapter 10 – An Introduction to Calculus (as time permits)
6. Course Format

Course material in Pre-Calculus will be presented in a variety of instructional methods, including, but not limited to:

 - i. Teacher led lectures
 - ii. Small group discussion
 - iii. Hands-on work with calculators, other technology, and manipulatives
 - iv. Analysis of mathematical tasks
 - v. Class projects
 - vi. Student Presentations
 - vii. Group work
 - viii. Discovery/Problem solving opportunities

7. Course Expectations

- a. Students are expected to be active participants in the learning process. This includes participating in class discussions, thinking about questions posed by the teacher and by classmates, construct viable mathematical arguments, and to help create an atmosphere that is conducive to learning.
- b. Students are expected to be responsible students. Responsible students are ready to learn throughout class by having required materials, being respectful of others and self, and being focused on mathematics. Students are also expected to complete assigned tasks (homework, class work, and other assignments), and seek extra help from the classroom teacher, as needed. Furthermore, responsible students will correct mistakes on homework and quizzes and will do their best to learn for understanding.
- c. Students are expected to show knowledge of all course objectives and apply that knowledge to real world situations. Furthermore, retention of material beyond the unit assessments is necessary. Students are expected to apply previously learned mathematics to new content to strengthen their mathematical understanding. Students will be expected to apply algebraic, numerical, and graphical reasoning to solve problems and explain their reasoning to others.
- d. Students will be asked to synthesize, analyze and evaluate mathematical concepts to create further mathematical ideas.
- e. The TI-Nspire is required.

8. Grades

- a. Quizzes/Projects 30-40%
- b. Tests 60 – 70 %
- c. Group grades may be given on homework and projects.
- d. As per department policy, extra credit shall not exceed 2% of the students' grade.

9. Mathematical Practice Standards: All Morton High School Students will:

- a. Make sense of problems and persevere in solving them
- b. Reason abstractly and quantitatively
- c. Construct viable arguments and critique the reasoning of others
- d. Model with mathematics
- e. Use appropriate tools strategically
- f. Attend to precision
- g. Look for and make use of structure
- h. Look for and express regularity in repeated reasoning