Course Syllabus

1. Title – AP Calculus AB – Honors

2. Text – *Calculus: Graphical, Numerical, Algebraic* AP Edition. (Boston: Pearson Prentice Hall, Finney, Demana, Waits and Kennedy, 2007)

3. Prerequisite – C or higher in Pre-Calculus – Honors (may be taken concurrently with consent of department)

4. Course Description
    Calculus is designed as any introductory course and is equal to a college level Calculus I and part of Calculus II. The course follows an Advanced Placement (A.P.) outline, focusing on four topics: limits, derivatives, definite and indefinite integrals, and applications. Students may take the A.P. Calculus exam (optional) at the end of the year that can earn college credit if they earn the score required by the university. More emphasis is placed upon application than upon proof. Students may experience more success in college calculus with this course as a foundation. Technology such as the TI-Nspire will be used to enhance student learning.

5. Course Content
    a. Semester 1
        i. Chapter 1 – Prerequisites for Calculus
        ii. Chapter 2 – Limits and Continuity
        iii. Chapter 3 – Derivatives
        iv. Chapter 4 – Applications of Derivatives
    b. Semester 2
        i. Chapter 5 – The Definite Integral
        ii. Chapter 6 – Differential Equations and Mathematical Modeling
        iii. Chapter 7 – Applications of Definite Integrals

6. Course Format
    Course material in 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 in 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. Use of a TI-Nspire CAS is permitted.

8. Grades
    a. Homework 5 - 10%
    b. Quizzes/Projects 35-50%
    c. Tests 45-55% (Cumulative Project is 60% of last 9 weeks grade.)
    d. Group grades may be given on homework and projects.
    e. 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