Expectations: This honors level course in precalculus is designed to provide a solid foundation for calculus, as well as a substantial investigation of introductory topics in differentiable calculus. The pace and rigor of this course require that you come to class each day with a grasp of recent material which allows you to confidently take part in the day's lesson. I expect you to actively participate in class discussions, productively contribute to group efforts, and to spend substantial time on each homework assignment, even if only a few problems are assigned.

Grading: Quarter grades will be comprised of the following:
- Tests (usually one or two per chapter) and Quizzes (on occasion)
- CBL (Calculator-Based Laboratory) Reports
- Homework
- Grade Calculation: (Points Earned/Points Possible) X 100%

- Homework should be completed with the same quality that you would provide on an exam. It will be checked at non-prescribed intervals and may be collected from students at random and graded. <u>Late homework will not be accepted</u>.

- **Homework missing due to legal absence should be made up within two days of returning to class. Full credit will be given if the homework is made up before the unit test/quiz.**

- CBL Reports must include a cover sheet and comply with the requirements provided. (Reference handout "Guidelines for Calculator Based Laboratory (CBL) Reports")

- CBL Reports submitted late will receive a 15% deduction for each of the first two days late, and a grade of zero thereafter. Every attended school day (regardless of whether you sign in late, out early, or miss class) will count towards this requirement. If you miss class on such a day, bring the assignment to my office.

- **If you are legally absent on the day of an assessment, it is your responsibility to make up the test before the end of class on the day that you return, unless you have made other arrangements with me.**

- **If you sign in or out of school legally on the day of an assessment, it is your responsibility to make up the assessment on a free period <u>that same day</u>. If this is not possible, the assessment must be made up before the end of class on the day that you return.**

- Failure to complete any assessment will result in a grade of zero for that assessment.

- Non-legal absences (such as cutting class) or other absences (such as attending a pullout without my prior permission) will result in a grade of zero on any test, quiz, homework, assignment, or Computer Activity assigned, scheduled, or due that day, as well as a 20 point deduction from total points earned. No make-ups will be permitted.

- Points will be deducted for lack of preparedness, lack of participation/contribution to class activities, repeated lateness, and/or disruptive behavior.

- The final exam will consist of two parts: an precalculus component (2 class periods, roughly 65%-70% of final exam grade) which will be given upon completion of the precalculus portion of the course, and a calculus component (1 or 2 class periods during the last week of classes, roughly 30%-35% of final exam grade.)

- The final course grade will be the average of each of the four quarter grades and the final exam grade.

Extra Help: Available to students on the following days, or by appointment:
Monday after school, Wednesday before school (Math Office or S-6)

----- ** Please return the signature page tomorrow. Keep these policies in your notebook for future reference. ** -----

Course Outline: Precalculus/Calculus Honors

Course Overview:

Precalculus/Calculus Honors is designed to prepare highly motivated mathematics students for a first semester college calculus course. Approximately 70% of the school year will be devoted to the study of precalculus topics, and the remaining 30% of the year will be devoted to introductory topics in differentiable calculus.

The course includes the use of technology (in the form of the Texas Instruments TI-83/TI-84 graphing calculators) blended with traditional precalculus topics. This approach emphasizes conceptual understanding while retaining the development of fundamental skills in algebra, trigonometry, analytical geometry, and introductory calculus concepts.

One of the underlying features of the course is the implementation of the "Rule of Four", which allows students to represent mathematical models in four ways: verbally, numerically, graphically, and algebraically. The use of one mode of representation to confirm the results obtained with another mode provides for a powerful learning experience in which students can link key ideas. In addition, should a problem be very difficult (or impossible) to solve using one mode of representation, emphasis on the Rule of Four allows students to consider an alternative model to find a solution.

Examples used throughout the course frequently model real-world phenomena. The modeling of such phenomena (often using actual data) and the Rule of Four allows students to develop a solid conceptual understanding as well as an appreciation and knowledge of how mathematics is used in other fields. The text and supplementary materials provide a variety of problems from many disciplines, including business, economics, finance, biology, medicine, physics, chemistry, studies of populations, and other practical examples and exercises.

The Texas Instruments TI-83/TI-84 graphing calculators will be used throughout the course. These calculators are able to quickly perform a variety of calculations, and provide the user with numerical and graphical displays. This allows the student to focus on the concepts that are being investigated rather than simply mastering the mechanics of tedious calculations.

The Texas Instruments Calculator-Based Laboratory (CBL) is used in conjunction with the TI-83/TI-84 graphing calculators and allows data from various collection devices (motion sensors, voltage probes, thermocouples, light sensors, microphones, etc.) to be input directly into the calculator. A number of labs are included in the curriculum which allow the student to model real world phenomena, thus reinforcing the underlying curricular theme of conceptual understanding through mathematical modeling.

Course Outline

Note: The number of days per chapter is approximate, and we will <u>not</u> follow the textbook in this order.

Precalculus:

Chapter 1: Functions and Graphs (10 days)

Chapter 2: Polynomial, Power, and Rational Functions (20 days)

Chapter 3: Exponential, Logistic, and Logarithmic Functions (20 days)

Chapter 4: Trigonometric Functions (20 days)

Chapter 6: Vectors, Parametric Equations, and Polar Equations (25 days)

Chapter 9: Discrete Mathematics (10 days)

Precalculus Component of In-Class Final Exam and Review (5 days)

Calculus:

Chapter 2: Key Concept: The Derivative (15 days)

Chapter 3: Short-Cuts to Differentiation (25 days)

Calculus Component of In-Class Final Exam and Review (5 days)

Resources:

<u>Precalculus Textbook</u>:
Demana, Waits, Foley, Kennedy. *Precalculus: Graphical, Numerical, Algebraic*. 6th ed.
Boston: Pearson Education, Inc., 2004.

<u>Calculus Textbook</u>:
Hughes-Hallett, Gleason, McCallum, et al. *Calculus: Single Variable*. 3rd ed. New York:
John Wiley & Sons, Inc., 2002.

<u>Calculator</u>:
All students are required to have daily access to a Texas Instruments TI-83, TI-83+, or
TI-84 Graphing Calculator.