Fall, 2009   **SYLLABUS**   Dennis Ebersole
                            Analytic Geometry Calculus I with Review, Part 1
email: debersole@northampton.edu or medce01@moravian.edu   610-861-5383

Office Hour: Wednesday: 3:45 – 4:45

TEXTS: 1. Stewart, James. *Calculus: Early Transcendentals* (6th Edition). Thomson, 2008.
                2. Ebersole, Dennis et al, *A Companion to Calculus*. 2nd Edition. Brooks/Cole. 2006.

        This course is designed for students who need a review of precalculus mathematics in order
to successfully complete Calculus. The course proceeds at a more leisurely pace than Calculus I and
integrates precalculus topics as appropriate throughout the course. The two courses Math 106 and
Math 166 are the equivalent of Precalculus and Calculus I. The complementary text, *A Companion
to Calculus* presents precalculus topics with which you must be proficient to be successful in
calculus. This text will be utilized throughout the course.
        This course will include extensive use of technology to assist you in understanding the
mathematics being taught. I recommend you purchase the TI-89 calculators for use in this course.
The TI-89 has a computer algebra system in ROM. It can perform all the symbol manipulation
associated with Calculus I and Precalculus such as factoring, solving equations, differentiating and
integrating functions. We will use the calculators to find patterns and as a tool in problem solving. I
will provide the keystrokes needed to complete the projects we will do in class. A graphing
calculator such as the TI-83 or TI-84, which has many of the same features as the TI-89, can be used
for some of the projects. However, these calculators do not include a computer algebra system.
Graphing calculators can be purchased at Best, Staples, Sears, Service Merchandise, etc. The TI-89
graphing calculators may be used on all quizzes and tests.
        The major goals for the course are:
1. The student will be able to define, model, and solve problems amenable to solution using
precalculus and differential calculus techniques and interpret any solution in terms of the original
problem;
2. The student will be able to communicate mathematically using the appropriate algebraic or
calculus notation, graphs, or tables;
3. The student will see connections between the mathematics learned and other disciplines and areas
of his/her life and will be able to apply the mathematics learned to other areas;
4. The student will be able to reason both inductively and deductively; that is, to recognize and
describe patterns, to make and test conjectures, and to create simple proofs;
5. the student will value the power of mathematics; for example, will recognize that one
mathematical concept can be used to model many different real-world situations;
6. the student will be able to use a graphing calculator as a tool to solve problems.
        In order to become a better problem solver and to learn to reason mathematically, you will be
asked to solve many problems and discover properties. Most of this will occur through group
projects. For these you will be assigned to a team of three or four students. The team will work on
the problem together in class and agree on a solution. I will choose one of the papers for grading.
Every team member will receive the same grade. Since some of these group projects can only be
done in class, it is essential that you attend every class. Since group projects improve problem
solving and reasoning skills as well as introduce new concepts, each project should be mastered. A
team will not receive a grade on a project until it is totally correct. At this point everyone on the

team receives a score of 100 on the project. You are expected to work together to correct any errors on a project. The work in groups will help you to meet the second goal, communicating mathematically. Some of the problems will involve other disciplines. Also, you may be asked to find applications of the mathematics being learned for homework.

Since I want you to have a good understanding of the key concepts, I will use visuals extensively and ask you to write about your understanding of important concepts. Problem solving will be emphasized. You will be asked to apply the calculus to other disciplines such as business and economics. You will receive frequent feedback through homework, quizzes and tests. In Math 175 you will learn how to represent functions using words, symbols, graphs and tables. You will be able to operate on functions and use functions to model real world problems. You will develop a library of functions with which you are familiar with and learn how to transform these basic functions. We will investigate the concept of a limit leading to definitions of continuity and differentiation of functions. The derivative will be used to model change and to solve problems. We will investigate trigonometric functions and their derivatives.

Feel free to ask me to explain a concept in a different manner, if the original explanation is insufficient. I welcome suggestions for improving the course.

Mathematics Department Academic Honesty Policy
The Mathematics Department supports and is governed by the Academic Honesty Policy of Moravian College as stated in the Moravian College Student Handbook. The following statements will help clarify the policies of the members of the Mathematics Department faculty.

In all at-home assignments which are to be graded, you may use your class notes and any books or library resources. When you use the ideas or thoughts of others, however, you <u>must</u> acknowledge the source. For graded homework assignments, you may not use a solution manual or the help (orally or in written form) of any individual other than the instructor. If you receive help from anyone other then your instructor or if you fail to reference your sources, you will be violating the Academic Honesty Policy of Moravian College. You may work with your fellow students on homework which is not to be graded. You are responsible for understanding and being able to explain the solution to all assigned problems, both graded and un-graded.

All in-class or take-home tests and quizzes are to be completed by you alone without the aid of books, study sheets, or formula sheets unless specifically allowed by your instructor for a particular test. Only the individuals on your team may work on group projects.

Special Accommodations
Accommodations will be made for those students with disabilities or special needs, if they are verified by the Learning Services for Disability Support office.

WEEKLY SCHEDULE

WEEK #   COVERAGE

1   Overview of Course; *Companion* Chapter 1 Cartesian Coordinates

2   *Companion* Chapter 2 Functions; Quiz 1

3   **Stewart** 2.1; *Companion* Chapter 3 Companion to Limits

4   **Stewart** 2.2, 2.3; Quiz 2

5   **Stewart** 2.4; *Companion* Chapter 4 Companion to Continuous Functions

6   **Test 1**; **Stewart** 2.5; *Companion* Chapter 5 The Role of Infinity

7   **Stewart** 2.6; *Companion* Chapter 6 Rates of Change; **Stewart** 2.7; Quiz 3

8   **Stewart** 2.8; *Companion* Chapter 7 Companion to Rules of
                 Differentiation; **Stewart** 3.1

9   **Stewart** 3.2; **Test 2**

10   *Companion* Chapter 8; **Stewart** 3.3

11   Quiz 4; **Stewart** 3.4; *Companion* Chapter 9 Companion to Implicit
                 Differentiation

12   **Stewart** 3.5; **Test 3**

13   *Companion* Chapter 15; **Stewart** 3.6; Quiz 5

14   **Stewart** 3.7; REVIEW FOR FINAL EXAM

15   **Final Exam**

GRADING POLICY

Although attendance is not used in determining your grade, I assume that you will attend all classes. Also, unless you have a valid excuse (for example, illness) you will not be allowed to make up quizzes or group homework given during your absence. You can replace a missed quiz or homework by doing an extra credit problem. At least two extra credit problems will be given during the semester. If you miss a test without a valid excuse, you may take a different form of the test. This test will count as a retest as defined below.

It is my policy to allow you to take a retest on all tests. If you take a retest, the original score is dropped and your score for the test is the retest score less 10 points. In no case will your grade suffer because you attempted a retest; if the grade would be less after deducting the 10 points, I will use the original score. Quizzes may not be retaken. If you have a valid excuse for missing a class in which a quiz is given, I will use one fewer quiz grade in computing your average. You will receive at least one grade each week - either a quiz, a test or homework grade. You will have three tests and a comprehensive final exam.

The standard cutoffs for plus and minus grading will be used in determining course grades.

The emphasis placed on each type of evaluation is as follows:
TESTS:	40%
QUIZZES, GROUP WORK:	40%
FINAL EXAM:	20%