

MATH 136 – Advanced Placement Calculus

Fall 2007

MTWF 1:00 - 1:50 PM

Classroom: Swords 359

Syllabus

Instructor: Prof. David Damiano, 341 Swords, 793-2476/3374, ddamiano@holycross.edu

Office Hours: Monday 11 AM - Noon
Tuesday 2 - 3 PM
Wednesday 10 - 11 AM
Friday 10 AM - Noon
and by appointment.

Course Home Page: <http://mathcs.holycross.edu/~dbd/math136/math136.html>

Course Materials (available in the College Bookstore): *Calculus: Single Variable, Concepts and Contexts 3E*, by James Stewart.

Intended Audience: MATH 136 is a one-semester version of one variable calculus for students who received one unit of AP calculus credit or who have successfully completed a year of calculus in high school. (See the last page for a detailed statement of the Department's placement policy.) Completion of this course satisfies the calculus requirements of other majors at the College, including Biology, Chemistry, Computer Science, Physics and Economics. This course is suitable for students who are interested in studying mathematics beyond one-variable calculus. Further, this course (or an equivalent course or 2 units of AP calculus AP credit) is a prerequisite for taking intermediate (200 level) mathematics courses.

Topics: We will cover topics in the order that they are presented in the text. During (roughly) the first three fifths of the semester, we will move rather quickly through material in Chapters 1 through 6, which should be familiar from high school calculus. These cover differentiation and integration. During (roughly) the last two fifths of the semester we will move more slowly through Chapters 7 and 8, which cover differential equations, and sequences and series, topics you may not have seen in high school calculus.

Class Format: Monday, Wednesday and Friday will be lecture days. If the schedules of students in the class make it possible, and there is a room available, we will split the class in two on Tuesdays for a discussion section. The details will be discussed during the first class. If this is possible, a schedule of the discussion sessions will be distributed later in the first week of classes. Homework will normally be due on Fridays. There will be limited time to review homework in class. If you would like assistance on homework problems, please see me in office hours or attend the Calculus Workshop.

Calculators: It will be useful to have a graphing calculator for this course both to do rudimentary graphing and to do algebra. Any graphing calculator that you are comfortable with should suffice. If you are purchasing a calculator for this course it does not have to be a high-end calculator. In fact a TI-83 would suffice.

Grading: Your total course percentage will be made up from homework, participation, quiz and exam grades as follows:

Homework	10 %
Collaborative Assignments	5 %
Class Participation	5 %
Quizzes (6)	20 %
Hour Exams (2)	15 % each
Final Exam (12/15)	30 %
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Total	100 %

You may drop 2 quiz grades for a total of 4 quizzes that count for credit. Each graded assignment, quiz and exam will receive a numerical score which will contribute to the appropriate percentage. At the end of the semester, total course percentages will be used to determine final grades. I do not use an absolute scale to determine letter grades.

Academic Honesty: The Department of Mathematics and Computer Science adheres to the College's policy on Academic Honesty, which may be found on page 13 of the 2007-2008 College Catalogue. In addition, the department has formulated the attached statement intended to amplify the policy as to how it might apply in mathematics and computer science.

Quiz/Test Schedule (8/29/07):

Any changes to the schedule of assignments, quizzes, or exams will be announced in class. Homework is usually due on Friday, the day of the quiz. Quiz and test questions will be similar to homework questions. There will be an evening review session before each hour exam. The material to be covered on a quiz or hour exam will be announced one week before the quiz or exam.

- Quiz 1: Friday, September 7.
- Quiz 2: Friday, September 21.
- Test 1: Friday, September 28.
- Quiz 3: Friday, October 12.
- Quiz 4: Friday, October 26.
- Test 2: Friday, November 2.
- Quiz 5: Friday, November 16.
- Quiz 6: Tuesday, December 4.
- Final Exam: Thursday, December 13, 2:30 - 5:30 PM. (Comprehensive exam.)

Learning Tips. Here are several suggestions to help you learn calculus.

- In class: Take careful notes. If you don't understand an idea or point being made or calculation, ask about it. We have plenty of time to answer questions but you must ask them. When opportunities arise to talk in groups or present material at the board, take advantage of them. Talking about mathematics is an important way to formulate your understanding of the concepts.
- Out of class: Reread your class notes as soon after class as possible. Summarize your notes for the next class and reread your summaries to prepare for the next class. Read the text before attempting assignments. Mark up the text not just by highlighting but by commenting about concepts and calculations in the margins. Rewrite ideas in your own words and fill in the gaps in the text's calculations. Also, note things that you don't understand so that you can ask about them in class.
- Using the Book: Mathematics text books can be difficult to read. In part, this is because language of mathematics has developed over many hundreds of years into a precise and concise mode of expression, so that mathematics, including calculus, is expressed in a dense but rich symbolic language. Learning calculus necessarily involves mastering this symbolic language. Accordingly, mathematics must be read differently than ordinary prose. One must be attentive to every line and every word of the text and to every symbol that appears on the page.
- Homework: The goal of assignments is to help you develop your understanding of the material. This is accomplished both by basic calculations which help to become fluent in the symbolic language of mathematics, and by more open-ended thought problems which allow you to explore ideas. You should attempt homework problems *after reading the text and your notes*. The least effective way to learn the material is to parrot examples in the text that appear to be close to a particular homework problem. You may also find it helpful to discuss homework problems with other students in the class. It is, however, essential that you write up your own solutions and do not copy those of anyone else.
- Office Hours: If you find that you have additional questions that you would like to ask outside of class, which is quite common in calculus, please see me in office hours. While I'm pleased to speak with students about calculus any time, it's important for your benefit that you seek assistance before assignments are due.
- The Calculus Workshop: In addition to my office hours, you should also consider attending the Calculus Workshop, open Sunday through Thursday evenings 7-9 PM in Swords 328. This is a drop-in tutoring center for students with questions about calculus.
- Quiz and Test Preparation: There will be 6 quizzes during the semester. These will consist of 2 or 3 questions and will cover material introduced since the last quiz or test. These will be given at the beginning of class, so it is important that you have your questions answered prior to that class. There will be 2 in-class hour exams that will cover the material covered since the preceding test. You should begin studying for tests at least one week in advance; you should organize your studying so that you progress through all the material that is covered on the test; you should study from the text, study guide and class notes; and you should make use of office hours and the Calculus Workshop. It is important to break up your studying into manageable chunks of time that are spread over each day of the week before the test. The final exam is a three-hour comprehensive exam, so you should allow more time to study for the final than you do for hour exams.

Advisory Information on Introductory Mathematics Courses and AP Credit (from the Department web page)

- Students taking a year of mathematics to satisfy a major requirement in another discipline (and who have not studied calculus previously) usually take either
 - MATH 125, 126 – Calculus for the Social Sciences 1,2,
 - MATH 131, 132 – Calculus for the Physical and Life Sciences 1,2, or
 - MATH 133, 134 – Intensive Calculus for Science 1,2

These are all introductory calculus courses, but aimed at different audiences. For more information, see the course descriptions. None of them presupposes any work in calculus in high school. These courses are alternatives to each other. No student will receive credit for any two of MATH 125, 131, 133.

- The sequence MATH 125, 126 is normally a terminal sequence in the department. Students considering taking more mathematics courses beyond calculus should begin in MATH 131, 133, or a higher level course. However, under special circumstances, the Chair may allow a student who has completed MATH 126 to receive credit for MATH 132 or MATH 136 (AP Calculus).
- Students who have successfully completed a semester of calculus in high school should consider starting in MATH 131.
- Students who have received a score of 4 or 5 on the AP Calculus AB exam will earn one unit of credit, and are advised to take MATH 136, MATH 126, or MATH 132. Students will forfeit their AP credit if they opt to take MATH 125, 131, or 133.
- Students who have successfully completed a year of calculus in high school, but who did not take the AP exam, or who scored a 3 or lower on the AP Calculus AB exam should still consider starting with MATH 136 (AP Calculus), since much of the material in MATH 125, MATH 131, or MATH 133 will be review.
- Students who receive a score of 4 or 5 on the AP Calculus BC exam and an AB subscore of 4 or 5 will earn two units of credit and are advised to take MATH 241 (Multivariable Calculus). One AP credit will be lost if the student starts in MATH 126, 132, 134, or 136, and both credits will be lost if the student starts in MATH 125, 131, or 133.
- Students who receive a score of 3 or lower on the BC exam and an AB subscore of 4 or 5 will earn one unit of credit and are advised to take MATH 136, MATH 126, or MATH 132. Students will forfeit their AP credit if they opt to take MATH 125, 131, or 133.
- MATH 126 is now offered in the fall and spring semesters. Successful completion of MATH 126 alone satisfies the mathematics requirement for the Economics and Economics/Accounting majors.
- Successful completion of MATH 136 alone satisfies any requirements for MATH 125, 126 or MATH 131, 132.