Mathematics 119, Calculus II
Fall 2008

Instructor
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Required Materials
A graphing calculator. I recommend the TI-83 Plus, TI-84 Plus or the TI-86.

Network Resources
Blackboard http://blackboard.agnesscott.edu
Egrade http://aca-egrade.agnesscott.edu/classes/119AF08

Goals
• Learn to examine mathematical concepts graphically, numerically, and algebraically.
• Be able to define, describe, and apply the concepts of calculus to include definite and indefinite integrals, antiderivatives, series, and differential equations.
• Learn to work with the basic computations of integral calculus.
• Develop skills in problem analysis and problem solving.
• Learn to use and trust your intuition to better understand how to interpret and solve problems.
• Learn to interpret real-world problems in the language of mathematics.
• Be able to use graphing calculators and computer software as computational tools for understanding and solving problems in calculus and its applications
• Learn to communicate mathematics effectively, both verbally and in writing.

Topics
• If you did not take Math 118 at Agnes Scott, you should read through Chapter 5 as a review of the basic ideas of definite integrals and its development as the limit of Riemann sums, its interpretation as area and average value, and the Fundamental Theorem of Calculus. Even if you did take Math 118 here, you would benefit by a quick review of this material.
• Constructing Antiderivatives: Chapter 6, sections 1–4
• Integration: Chapter 7, sections 5–6, then 1–2, 7 (note change in order)
• Using the Definite Integral: Chapter 8, sections 1, 2, 4, 7, 8
• Geometric Series: Chapter 9, section 2 (other topics will be covered in the context of chapter 10)
• Approximating Functions Using Series: Chapter 10, sections 1–3
• Differential Equations: Chapter 11, sections 1–5, as time permits
Office Hours and Sources of Help

I do not have regularly scheduled office hours. Rather, you are encouraged to stop by my office at any time when you have questions or problems and if I am not too busy I will be happy to work with you. You may also stop by to make an appointment for a time that is mutually convenient. Another good way to contact me is through email, particularly during the evenings or weekends. I promise to respond to your email as quickly as I can.

You are also encouraged to work with the learning assistants assigned to this course, in the afternoons and evenings in the Math Learning Center in Buttrick G-12. Their hours and location will be on the weekly learning support schedule. These are times when you are encouraged to drop in and work alone or with others and chat about your progress. Students who attend these sessions weekly on a regular basis often find them beneficial.

The Resource Center for Mathematics and Science Workshops: This semester the Resource Center for Mathematics and Science will be holding various workshops. Topics include (1) study skills, (2) test strategies, (3) summer research information, and (4) career opportunities in math and science. For more details, go to http://rcms.agnesscott.edu/.

Reading the Text!¹

In this course, it is absolutely essential that you do the reading assignments. Your experience with previous math courses may make this seem unlikely, since it may have been possible to avoid reading the text, yet do adequately well by copying down the examples the instructor did in class and then doing the homework exercises by just changing the numbers in those “pattern examples” and the pattern examples given in the text. Unfortunately, this approach resulted in students being able to do the mechanical computations quite well, but having no real understanding of the material and no real ability to apply it in situations that are even a little bit different from that covered by the pattern examples. This is one factor that led to the national movement toward reformed courses, like Math 119, stressing understanding. This modern approach to learning requires new methods in the classroom emphasizing learning rather than lecturing, as well as new texts such as the one for this course.

Doing the problems requires an understanding of the material in the text, not just the ability to change numbers in pattern examples. Also, I will be counting on you to read the text since I will not be lecturing very much and will be relying on you to have seen the material before we work with it in class.

Since the reading is so important, some hints on how to do it might be helpful. You may find that slight variations on the following scheme will work for you.

a. Plan on doing the reading more than once, and do not make it an essential goal to understand everything in the reading the first time through it. The first reading should be devoted only to getting a general overview of the material of the section.

b. After the first reading, stop for a few minutes and attempt to summarize to yourself, in your own words, what the section is all about. Then immediately reread the section.

¹Adapted from materials by Bob Megginson, University of Michigan Mathematics Department.
c. During the second reading, make a serious effort to understand all of the material in the section. This does not mean to memorize it, but rather to understand all of the points before going on.

d. If you do not understand something during the second reading, put the book aside awhile and return to it later when your mind is fresher. If you still do not understand it after returning to it, ask me or some other members of the class about it. Do make sure you eventually understand all of the material. You will probably get tripped up in later reading, in doing the homework, or on tests if you treat material you don’t quite understand as “probably not all that important.”

e. Do not get discouraged if some points require some time to understand. It is not uncommon to have to think about a point in a math text for a half hour (or more, for more complicated concepts) before it becomes clear what is really going on.

Do not just accept mathematical statements or graphs of functions depicted in the text, but try to verify these statements and graphs yourself. Working with your graphing calculator while you read the text is a good way to do this. Often the book will ask you to try something. When it does, try answering the book’s question before reading further. If you have questions, ask in class, stop by my office, or send me email.

Assessment

You will be given homework practice problems to do from each section we cover. You will need to take the responsibility to keep up with these problems and work on the appropriate problems as we cover those sections in class. You are encouraged to work with others on these problems and check each other’s work. You may ask questions about them in class or come talk to me about the problems. You are expected to check your answers to the odd-numbered problems in the back of the book. Answers to selected even-numbered problems will be checked using the Egrade web site. You may rework any of the Egrade problems until you correctly solve them. The purpose of the homework is to help you learn the concepts and techniques for working with calculus, and to prepare for the exams. Therefore you should complete the homework before the exams are given.

In addition you will be given some problem sets that I will ask you to write up and submit for me to grade. You are encouraged to work together on all these problems, but each student is always expected to write up (and understand) her own solutions.

The homework assignments and problem sets can be found at the course site on Blackboard. Information about homework problems and assignments will be posted as announcements on Blackboard so I expect you to check Blackboard on a regular basis.

Integral Proficiency Skills. All Calculus II students will be expected to pass an “integration proficiency test”. This test will have 7 integration problems (chapter 6 and 7 stuff) and you must get each problem correct in order to pass. You may re-take the test as often as needed until you pass it. The test will be taken using the Egrade software which will provide immediate feedback on your score. You can also use this software to practice similar integration problems. This test is 5% of your final grade, and no partial credit will be given.

There will be three tests and a final. The following schedule is subject to change. Watch Blackboard for more precise information.
Test 1 will cover sections 6.1 – 6.4, 7.5, 7.6 (approximately end of September)
Test 2 will cover sections 7.7, 8.1, 8.2, 8.4, 8.7, 8.8 (approximately end of October)
Test 3 will cover sections 9.2, 10.1 – 10.3 (approximately end of November)
The final will cover the entire semester.

**Honor Code and Plagiarism**
You are encouraged to work together on the homework for this course, but each student is always expected to write up (and understand) her own solutions. Working with someone else to understand an idea or a concept or even the requirements of an assignment is group learning and is encouraged. But once you understand what you were struggling with, you should complete the assignment individually, giving the work your own identity. Accessing or copying work of another student from a previous semester is a violation of the Honor Code.

**Computing Resources**
We will make frequent and important use of calculator technology to help us learn about functions and to work with functions to solve real problems. You will use a graphing calculator for much of the work in the course. The philosophy we will take can be summarized by the following adaptation of a quote from *Elementary Differential Equations, 5th Edition*, by William Boyce and Richard DiPrima:

“For you, the student, these various computing resources have an effect on how you should study functions. It is still essential to understand the behavior of standard functions, and this understanding is achieved, in part, by working out a sufficient number of examples in detail. However, eventually you should plan to delegate as many as possible of the routine (often repetitive) details to a computer while you focus more attention on the proper formulation of the numeric, graphic, and analytic methods so as to attain maximum understanding of the behavior of functions and of the underlying processes that the functions model. Our viewpoint is that you should always try to use the best tools available for each task. Sometimes this is a pencil and paper; sometimes, a computer or calculator. Often a judicious combination is best.”

**Attendance**
Regular attendance for this class will be very important since much of our class time will be spent on discussing problems or working in small groups on problems or computing experiments. It is therefore expected that you will attend and be prepared for every class, and that you will arrive to class on time. You are responsible for all material discussed in class whether you are there or not, and for submitting all work before the due date. Approval for extensions **must** be obtained in advance. An excessive number of unexcused absences or being late to class may result in a reduction of your course grade.

**Disabilities**
If you have a disability that may have some impact on your work in this class and for which you may require accommodations, please see Machamma Quinichett in the Office of Academic Advising to register for services. Students that receive accommodation checklists, please meet with me to discuss the provisions of those accommodations as soon as possible.
**Grading** (I reserve the right to change the point allocation if necessary)

Your grade will be determined by applying the most favorable of the following two weighting schemes.

Your two best exams (100 points each)............................................ 200 points
The remaining exam ................................................................. 75 points
Final exam ................................................................................... 125 points
Egrade homework and problem sets.......................................... 100 points
Integration Proficiency Skills .................................................... 25 points
**Total** ....................................................................................... 525 points

Or

Three exams (100 points each)..................................................... 300 points
Final exam ................................................................................... 100 points
Egrade homework and problem sets.......................................... 100 points
Integration Proficiency Skills .................................................... 25 points
**Total** ....................................................................................... 525 points