MATH 115 Section 4, Calculus I
Fall 2006

Instructor Info

Instructor: Ismar Volic

Meeting times: Tuesdays, Wednesdays, and Fridays 8:30—9:40 am, in SCI 380

Office hours: Mondays 11—12, Wednesdays 1:30—2:30, Thursdays 2—4, and by appointment, in SCI 325

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Textbook, FirstClass Conference, and Webpage

Text: *Calculus: Concepts & Contexts*, by J. Stewart, 3rd edition, Thomson Brooks/Cole, 2005.

FirstClass: The FirstClass conference for this course is *MATH115-4&5-F06*. Please add the icon to your desktop and check it often for new items. The conference will contain various important announcements, materials, and information about the course. You can also ask questions, have discussions, or arrange study groups through the conference. I will be checking the messages posted to it regularly.

Webpage: I will also post the materials for this course on my web page at
http://palmer.wellesley.edu/~ivolic/pages/courses.html
However, this page will not contain anything that is not already on our FirstClass conference and is just meant to be a backup source of information for you in case you cannot access FirstClass for whatever reason.

Prerequisites and Policies

Prerequisites: You have to be placed into MATH 115. If you placed into MATH 116, you should not be in this class. If you are not sure whether MATH 115 is where you have been placed, or haven't taken the placement exam, or are not sure MATH 115 is where you belong, see Prof. Phil Hirschhorn in SCI 356. I will give you a handout with the times he is available.

Attendance: It is not required that you come to class, although it is doubtful that you will do well in the course if you miss too many lectures. If you do decide to attend, *please be on time*.

Special
Arrangements: If you need special arrangements for the exams or any other aspect for the course due to religious observances or disabilities, please contact me as soon as possible. If you think you might need special arrangements, you should contact Jim Wice, the Director of Disability Services.

Calculators: Calculators are not required for this class. You may find them helpful in working out some of the homework problems, but I have tried to assign the exercises for which this should not be necessary. Further, calculators will not be allowed on exams. The emphasis in this course will be less on computation and more on understanding the mathematics itself, and reliance on calculators can unfortunately often work against this process.

Course Outline and Objectives

Most of the course will be devoted to the study of differential calculus, i.e. the study of the rate of change, followed by a brief introduction to integration. More detailed list of topics is on the last page of this syllabus. The objectives of the course are to introduce you to and give you a working knowledge of calculus, strengthen your analytical skills, increase your ability to communicate mathematics symbolically and orally, make you comfortable with reading and understanding mathematics on your own, and develop an appreciation for calculus as one of the greatest intellectual developments in history.

Assignments, Exams, and Grading

Homework: Homework problems for the entire semester can be found on our FirstClass conference. You are responsible for doing the exercises from each section as it is covered in class. Every Tuesday and Friday in class, you will turn in the problems from sections covered roughly up to and including the lecture before (but I will tell you precisely what to turn in each time). You will be graded on the content, but also in large part on clarity and presentation. You will be expected to follow the guidelines from the document *HWguidelines.pdf* which can be found on our FirstClass conference. It is very important that you keep up with the assigned work since the exams will be based on the homework problems. Feel free to work on the homework assignments together, but write them up individually. Late homework will not be accepted, but you are allowed to turn in two homework assignments up to one week later than the due date.

Exams: There will be two in-class midterms and a self-scheduled final. The midterms will be given on Friday, October 13, and Friday, November 17.

Extra credit assignment: If you go to http://palmer.wellesley.edu/~ivolic/pages/reading.html, you will find a variety of short stories, essays, puzzles, etc., available for download and reading. These are all in one way or another mathematically motivated. You may choose one of the writings and write a 4-5 page essay explaining and elaborating its content and the effect it has had on you (or lack thereof). The essay will be due near the end of the semester. If you are interested, we might even devote some class time to discussion of some of the writings. I will tell you more about all of this in due time.

Grading: 10% homework
25% each midterm
40% final

Resources

Office hours: Please take advantage of my office hours whenever you can. You do not need an appointment to come in. If you need help with the homework or material from class, if you feel that you are falling behind or that the material is consistently too difficult, or if you simply want to chat about anything, please come and talk to me. It is imperative that you talk to me as soon as a problem arises so that we can fix it quickly. If you cannot make the office hours, feel free to contact me and we will arrange a time to meet. The best way to reach me is through email, although I cannot guarantee that I will reply to a message sent after 9 pm until the next morning or a message sent during the weekend until the following Monday.

Review sessions: There will be four sessions in the first two weeks of classes designed to help you review the material which will be used heavily in our course. The sessions are at 12:30—1:20 on September 7, 11, 12, 14, and 15 (location TBA).

Help sessions:	You can get help from student tutors every Sunday through Thursday, 7—9 pm, in SCI 362. You do not need an appointment to attend these. Just show up and someone will be there to work with you on the homework problems or material from class.
Solutions manual:	There are several copies of the solutions manual on reserve at the Science Library, but you should consult it only after attempting to solve the exercises yourselves.
Other resources:	A variety of assistance is available to you through the Pforzheimer Learning and Teaching Center. Please visit their website at http://www.wellesley.edu/PLTC/. Your academic dean is also a good source of information and advice.

Important Dates

Friday, September 15	Last day to add
Friday, September 22	Credit/non ends
Friday, September 29	Last day to drop
Monday—Tuesday, October 9—10	No classes (fall break)
Friday, October 13	First in-class midterm
Tuesday, October 24	No classes (Tanner Conference)
Friday, November 17	Second in-class midterm
Wednesday—Friday, November 22—24	No classes (Thanksgiving break)
Tuesday, December 12	Last day of classes

Fore a more complete list of important dates, see http://www.wellesley.edu/Registrar/0607calendar.html

Math 115 course outline, fall '06

All sections refer to "Calculus: Concepts and Contexts" by James Stewart

Chapter 1: Functions and Models
    1.1 Four ways to represent a function
    1.2 Mathematical Models
    1.3 New functions from old
    1.5 Exponential Functions
    1.6 Inverse Functions and Logarithms

Chapter 2: Limits and Derivatives
    2.2 The limit of a function
    2.3 Calculating limits using the limit laws
    2.4 Continuity, Intermediate Value Theorem
    2.5 Limits involving infinity
    2.6 Tangents, velocity, and rates of change
    2.7 The derivative
    2.8 The derivative as a function
    2.9 What does f' say about f?

Chapter 3: Differentiation Rules
    3.1 Derivatives of powers and exponentials
    3.2 Product and Quotient Rules
    3.3 Applications of rates of change (time permitting)
    3.4 Derivatives of trigonometric functions
    3.5 The Chain Rule
    3.6 Implicit Differentiation and
    3.7 Derivatives of log functions
    3.8 Linear approximation

Chapter 4: Applications of Differentiation
    4.1 Related Rates
    4.2 Maxima and minima for functions
    4.3 Derivatives and shapes of curves, Mean Value Theorem
    4.4 Curve sketching
    4.5 Indeterminate forms and l'Hospital's rule (easy forms)
    4.6 Max/min applications
    4.9 Antiderivatives

Chapter 5: Integrals
    5.1 Areas and Distances
    5.2 The Definite Integral
    5.3 Evaluating Definite Integrals
    5.4 The Fundamental Theorem of Calculus
    5.5 Substitution