

Calculus of One and Several Variables

Math 8 ~ Spring 2010

Instructors:	Mitsuo Kobayashi	Sarah Wright	Scott Lalonde
Class Times:	Kemeny 108 MWF 11:15-12:20 X Hour: T 12-12:50	Haldeman 028 MWF 1:45-2:50 X Hour: Th 1-1:50	Kemeny 108 Tues, Thur, Sun 7 – 9pm
Office:	Kemeny 219	Kemeny 211	
Office Hours:	M: 2:30 – 3:30 Tu: 11:30 – 12, 1 – 1:30 W: 9:30 – 10:30 F: 2:30 – 3:30	M: 11:45 – 12:45 W: 9:30 – 10:30 TH: 10:30 – 11:30 F: 11:45 – 12:45	

X-hours will be used every week and will vary in nature. They will range from basically an office hour held in the classroom to an actual lecture covering new material. You are expected to attend these as you would regular class periods.

LEARNING OBJECTIVES

By the end of this course students will:

- See and appreciate calculus in their everyday lives.
- Successfully communicate mathematical knowledge through writing and speaking.
- Appreciate mathematics as a growing and changing field.
- Value peer collaboration and group learning while continuing to maintain a sense of self-motivation and personal understanding.
- Be ready to go on to Math 13:
 - Understand various techniques of integration, how and why they work, and when they can be applied.
 - Know the different tests for convergence and divergence of sequences and series, when to apply them, as well as the reasons we study infinite series.
 - Be comfortable working with functions of multiple variables, understand different coordinate systems for 3-dimensional space, and be able to use differential calculus techniques to solve problems.

PREREQUISITES

A student enrolled in Math 8 should have successfully completed one of the following: Math 3, Math 1&2, or an AB calculus curriculum.

Math 8 moves quickly, so it's essential that your algebra and trig (precalculus) be in good working order, along with your differential calculus (taking and interpreting derivatives).

TEXT AND RESOURCES

Calculus, James Stewart, Sixth Edition Chapters: 6, 8, 12-15

Nearly any calculus book will cover the material we need to cover in Math 8. If you've found one you particularly like, stick with it. If you have a different form or edition of Stewart's book, that will also work for your general reading. In any of these cases you'll be

responsible for acquiring all the assignment information, reading page numbers, homework assignments problems, etc. from your peers or books in the library.

Additional resources can be found on the course BlackBoard page.

TEACHING METHODS

Below is a description of how we “run” our classrooms. This is provided to you so that you know what to expect, and you understand why we do the things we do.

We have a lot of material to cover in this course, and the only way we see to get through it all is if we spend most classes at board “lecturing.” This does not mean you can sit back, relax, and blindly write down everything that we do. We’ll ask you questions and expect you to answer. “I don’t know,” is an acceptable answer. You should feel free to stop lecture and ask a question. We may ask a student to explain a concept to the class. Hearing an explanation from a peer can sometimes be much more meaningful than hearing it from us or reading it in a book.

EXPECTATIONS

What you can expect from your instructors:

- We will change the plan for the course. Our job is to teach you calculus. If you aren’t learning the best that you can, something needs to change, and it will. Expect in-class and BlackBoard anonymous surveys of your thoughts on the course, and to see incremental changes in the course based on these surveys.
- We understand that calculus is a difficult subject to master. We will be patient with you through your struggles, and give you your fair share of time with us to work through and overcome your obstacles.
- You can expect timely, yet not immediate, feedback on your work and course standing. This means you can expect graded homework returned on Monday, exams returned within a week at the latest, but you will not receive an answer to a “Can I turn in my homework during office hours after class?”- email that you send at 3am.
- Expect to be treated as others are treated: if everyone else turns in a quiz after 10 minutes, it isn’t fair to give you 12 minutes.

What you can expect of your TA:

- You can expect Scott to be familiar with your current assignment and the course material, but not necessarily ready to answer your questions with a perfectly phrased concise statement... it should be a discussion.
- Scott is **NOT** your personal tutor. He is there to answer general questions, help you complete your homework successfully and assist you in preparation for your exams. He is also not a solutions manual that happens to look like a person.
- Tutorial is from 7-9 on Tuesday, Thursday, and Sunday evenings. Scott will be there during those times, or have arranged for another TA to be there. He will not have office hours, nor will he be expected to stay late after tutorial.

What we expect from you:

- Each assignment has a due date or stop time, and you are expected to have them turned in by that time, unless prior arrangements have been made.
- Respectful participation in class: listening, asking questions, answering questions, **not** checking email or Facebook, **not** doing an assignment for another class, etc.

- Feedback and the effort to make this class your own.
- College-level quality writing: legible and proofread.

GRADING

(10%) WEBWORK There will be a WebWork assignment to correspond with nearly every section of the text and/or day of class. Each WebWork assignment will be open immediately following the corresponding lesson in class, and be due by the start of the next class period. Some assignments will be longer than others, and you'll be given an appropriate amount of time to complete them. The WebWork assignments are meant to check that you understand the basic definitions, theorems and techniques of the lesson.

(15%) HOMEWORK The weekly written assignments will be available on BlackBoard on Monday mornings and will be turned in Friday at the beginning of class. While these assignments may contain challenging mathematical concepts, your focus should be in the presentation of the solution. These write-ups will be returned to you on the following Monday with a credit or no credit score. You will be given chances to rewrite your assignment and turn it in on Wednesday. For the first three assignments, you will have as many rewrites as you need, the next three assignments you'll have only one chance to rewrite, and the final four should be nearly perfect when you turn them in on Friday, no rewrites. Thus, you should be learning from your mistakes, taking in and absorbing the feedback we give you, not just blindly making the suggested changes.

(15%) QUIZZES Quizzes will be given at the beginning of class each Monday. The purpose of these quizzes is to keep everyone up to speed in the course. The quiz will be given promptly at the start of class, take no more than 10 minutes, and will not be given at any other time unless arrangements are made before Monday. If you have been keeping up with the reading and homework and attending class regularly, you should have no problem getting 95-100% on every quiz. Everyone has bad days, thus your lowest quiz score will be dropped from your total.

(60%) EXAMS There will be two exams given during the term, and one cumulative final exam at the end. Because the final is cumulative, if your score on the final exam is higher than both of the other exams, your exam score will be completely based on the final. The point is to learn the material by the end of the term, so if you show you've mastered the material, the stops and starts of your learning process should not matter. Otherwise, 30% of your grade will be from the final exam and 15% from each midterm exam. There is more information on exam philosophy, what to expect, and how to prepare on the Blackboard site under EXAMS.

To assign final letter grades, the instructors will plot the point totals of all the students in both sections and assign grades based on clustering and averages. Although this is somewhat "curved" you will not receive any letter grade lower than the standard percentage grade assignments allows, i.e. if you earn 90% of all possible points the lowest grade you can be assigned will be an A-. A grading spreadsheet is available on Blackboard, and the mean and median scores for quizzes and exams will always be made available to you. While this doesn't guarantee you'll know your exact standing in the course or "What you need to get on the final to get a B+ in the class," you should be able to keep relatively good tabs on your status.

ACADEMIC HONOR CODE

On Exams and Quizzes: No help given or received. All exams and quizzes will be closed book. No calculators or computers are allowed.

On Homework: Students are encouraged to work together to do homework problems. What is important is the student's eventual understanding of homework ideas, and not how that is achieved. The Honor Code applies to homework in the following way. What a student turns in as a homework solution is to be his or her own understanding of how to do the problem, and his or her own explanation of the solution. Students must state what sources they have consulted, with whom they have collaborated, and from whom they have received help. The solutions you submit must be written by you alone. Any copying (electronic or otherwise) of another person's solutions, in whole or part, is a violation of the Honor Code.

If you have any questions as to whether some action would be acceptable under the Academic Honor Code, please speak to your instructor. This is definitely a situation in which it is better to ask permission than forgiveness.

ACADEMIC RESOURCES

Students with disabilities enrolled in this course and who may need disability-related classroom accommodations are encouraged to make an appointment to see their instructor before the end of the second week of the term. All discussions will remain confidential, although the Student Accessibility Services office may be consulted to discuss appropriate implementation of any accommodation requested.

Whether or not you have a disability, the Academic Skills Center is an excellent place to visit. Take some time to look at their videos and other resources. Would you benefit from some of the planning tools? Do you think you could improve your note-taking skills? Is stress eating your life? You're the only one who knows what might benefit you, and it doesn't hurt to look.

Tentative Schedule

Week#	Date	Stewart	
1	3/29	Chapter 5 6.1, 6.2	Substitution Area Between Curves Volumes
	3/31	8.1 8.4	Integration by Parts Partial Fractions
	4/2	8.2	Trigonometric Integrals
2	4/5	8.3	Trigonometric Substitution
	4/7	8.7	Approximate Integration
	4/9	8.7	Approximate Integration
3	4/12	~12.8-11	Motivation for Ch 12
	4/14	12.1 12.2	Sequences Series
	4/16	8.8 12.3 12.4	Improper Integrals Integral Test Comparison Test
4	4/19	12.5 12.6	Alternating Series Ratio Test Absolute Convergence
	4/20	EXAM 1	
	4/21	12.8 12.9	Power Series Functions as Power Series
	4/23	12.10	Taylor Series
5	4/26	12.10	Taylor Series
	4/28	13.1 13.2	Coordinates in \mathbf{R}^3 Vectors in \mathbf{R}^2 and \mathbf{R}^3
	4/30	13.3 13.4	Dot Product Cross Product
6	5/3	13.5	Lines in \mathbf{R}^3
	5/5	13.5	Equations of Planes
	5/7	14.1 14.2	Vector Functions Derivatives and Integrals
7	5/10	14.3 14.4	Arclength and Curvature Velocity and Acceleration
	5/11	EXAM 2	
	5/12	15.1 15.2	Functions of Several Variables Limits and Continuity
	5/14	15.3	Partial Derivatives
8	5/17	15.4	Tangent Planes
	5/19	15.5	Chain Rule
	5/21	15.6	Directional Derivatives
9	5/24	15.6	The Gradient
	5/26	15.7	Maxima and Minima
	5/28	15.7	Maxima and Minima
10	6/2	Review	Wrap Up
	6/4	FINAL	EXAM