Course Overview

Calculus is one of mathematics' premiere computational tools. It has pervasive applications in all the sciences and is part of the UAF core curriculum.

The two principal tools of calculus are differentiation and integration. Differentiation concerns how changes in one variable affect another. How does a population of bacteria change as time changes? How does the temperature of the ocean change as depth increases?

Integration, on the other hand, is a kind of reverse process to differentiation. We use it to answer questions such as: given the (instantaneous) rate of change of a population during a year, can we reconstruct the total population change for the year? We'll also find there is a surprising connection between integration and geometric area.

We have two principal goals in this class. We need to develop the mathematical theory of derivatives and integrals. We also need to learn how to use these tools in applications. This class has a higher emphasis on problem solving than you might have seen in math classes in the past. This is good; math is more fun when it is more than applying recipes. But there will also be basic computation exercises to do to build your proficiency with the tools.

Specific topics to be covered in this class include: limits and continuity, tangent lines and differentiation, applications of differentiation (modelling, optimization, curve sketching, root finding, etc.), definite and indefinite integration, the Fundamental Theorem of Calculus, and applications of the integral to volume and work problems.

Essential Information

Professor	David Maxwell	Teaching Assistant	Andrew Johnson
Office	Chapman 308C	Office	Chapman 302
Email	david.maxwell@uaf.edu	Email	fsasj@uaf.edu
Phone	474-1196	Phone	455-5438
Web	http://www.math.uaf.edu/~maxwell		
Text	**Calculus: Early Transcendentals**, 5th Edition, *James Stuart*, Brooks/Cole		

Prerequisites

The course prerequisites are a grade of 'C' or better in M107 and M108, ACT score of 28 or above, or SAT score of 600 or above, or COMPASS score of 56 or higher. It is frustrating to try to learn calculus before you are ready for it. To help you judge your level of preparation, there will be a short test on Tuesday, September 6 covering background material for the class. The test will not count toward your grade. Students who do poorly on the test (D or F) will be asked to make an appointment with me by September 9 (and preferably sooner).

Class Time

There will be four one-hour lecture classes each week. Although I'll be doing a lot of the talking during lectures, you are strongly encouraged to stop me at any point to ask questions. I'll try to ask you questions along the way as well. Lectures are more interesting and relevant when you participate actively.

Recitation Section

There will be a one-hour recitation section each Thursday lead by TA Andrew Johnson. The focus of recitation sections will be on working through problems. Most weeks recitation section will consist of a practice quiz followed by an answer session and an opportunity for you to ask questions about the week's homework. The goal of the quiz is to give you feedback on how well you are keeping up with the course material. Occasionally the quiz may be graded; you will be notified by the Monday before any graded quizzes.

Lecture Times		Thursday Recitations	
MWF	1:00-2:00 Gruening 208	Section F01	11:30-12:30 Gruening 412
T	2:00-3:00 Gruening 306	Section F02	2:00-3:00 Chapman 104
		Section F03	3:40-4:40 Chapman 104

Office Hours

I will schedule office hours after consuting with my classes for convenient times. The finalized office hours will be posted on my web site and outside my office door. You are very welcome to schedule an appointment outside of my regular office hours; please send me an email and we will arrange a time.

Math Lab

The Math Lab in Chapman 305 has tutors available at scheduled times throughout the week. This is a great place to get help with your homework or while studying. The hours for the Math Lab are posted on its door and on a link from the department's home page at `http://www.dms.uaf.edu`.

Homework

There is an assignment due every week at the start of Friday's class. The specific homework problems to be solved will appear on my web site at the latest on the Friday before the homework is due. A representative selection of the problems on each assignment will be graded. Solutions to selected homework problems will be posted on my website.

Midterms

There will be three in-class midterm exams. Each midterms will only cover material seen since the previous midterm (i.e. they will not be cumulative).

Monday October 3
Monday October 24
Monday November 14

Final Exam

There will be a final exam held on Friday December 16 from 1:00 p.m. to 2:00 p.m. at a location to be announced in class. The final will be comprehensive with an emphasis on material learned after the last midterm.

Evaluation

Course grades will be determined as follows:

Homework and Quizzes	25%
Midterm 1	15%
Midterm 2	15%
Midterm 3	15%
Final	30%

Letter grades will be assigned according to the following scale. This scale is a guarantee. I reserve the right to lower the grade cutoffs, but I will not raise them.

A	90–100%
B	80–89%
C	70–79%
D	60–69%
F	0–59%

Tentative Schedule

Week	Topics and Events
9/5–9/9	Chapter 1 Monday: Holiday Tuesday: Skills Test Friday: Last day for 100% refund
9/12–9/16	Sections 2.1 2.2, 2.3, 2.4 Friday: Last day for withdrawal without a 'W' (50% tuition refund)
9/19–9/23	Sections 2.5, 2.6, 2.7, 2.8
9/26–9/30	Sections 2.9, 3.1, 3.2, 3.3
10/3–10/7	Sections 3.4, 3.5 Monday: Midterm 1
10/10–10/14	Sections 3.6, 3.7, 3.8, 3.10
10/17–10/21	Sections 3.10, 3.11, 4.1

Week	Topics and Events
10/24–10/28	Sections 4.2, 4.3, 4.7 Monday: Midterm 2 Friday: Last day for withdrawal with a 'W'
10/31–11/4	Sections 4.7, 4.4, 4.5
11/7–11/11	Sections 4.9, 4.10, 5.1
11/14–11/18	Sections 5.2, 5.3, 5.4 Monday: Midterm 3
11/21–11/25	Sections 5.5, 5.6, 6.1
11/28–12/2	Sections 6.2, 6.3, 6.4
12/5–12/9	Sections 6.5, 6.6
12/12–12/16	Review Friday: Final Exam 1:00pm

Rules and Policies

Attendance Attend every class. Attend every recitation. Although attendance is not directly part of your grade, it is very easy in a math class to fall behind after skipping even one class. In my experience, people who skip calculus class fail calculus. Nobody wants that.

Collaboration You are encouraged to work together in solving homework problems. But each student must write up his or her solutions independently. Cloning (copying another student's homework) is not permitted and is a form of Academic Dishonesty (see below). If you receive significant help solving a problem, it is customary to make a note in your homework to give the person who helped you credit.

Late Homework Homework is due at the start of class on the date due.

UAF has a long campus, and you might be a minute or two late to class some day. If this happens, discreetly hold on to your homework and ask to hand it in at the end of class. I will accept it. If this policy is abused, I will cease accepting homework turned in after the start of class.

Homework turned in after the end of class will never be accepted. Ever. To compensate for this policy, your two lowest homework scores will be dropped.

Exam Aids Exams will be written without any aids. No notes, books or calculators will be allowed.

Makeup Exams You can make up an exam if certain extenuating circumstances prevent you from taking it and if you inform me in advance. Contact me as soon as possible if you are going to miss an exam.

Disabilities Services I will work with the Office of Disabilities Services (203 Whitaker, 474-7043) to provide reasonable accommodation to students with disabilities.

Cell Phones Turn off your cell phone before you come to class.

Incomplete Grade Incomplete (I) will only be given in Computer Science, Mathematics or Statistics courses in cases where the student has completed the majority (normally all but the last three weeks) of a course with a grade of C or better, but for personal reasons beyond his/her control has been unable to complete the course during the regular term. Negligence or indifference are not acceptable reasons for the granting of an incomplete grade. (Note: this is essentially the old University policy.)

Late Withdrawals A withdrawal after the university deadline from a Department of Mathematical Sciences course will normally be granted only in cases where the student is performing satisfactorily (i.e., C or better) in a course, but has exceptional reasons, beyond his/her control, for being unable to complete the course. These exceptional reasons should be detailed in writing to the instructor, department head and dean.

Academic Dishonesty Academic dishonesty, including cheating and plagiarism, will not be tolerated. It is a violation of the Student Code of Conduct and will be punished according to UAF procedures.