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 (modeling, optimization, curve sketching, root finding, etc.), definite and indefinite integration, the Fundamental Theorem of Calculus, and applications of the integral.

Essential Information

Professor	David Maxwell	Teaching Assistant	Mark Layer
Office	Chapman 308C	Office	Chapman 302
Email	`damaxwell@alaska.edu`	Email	mclayer@alaska.edu
Phone	474-1196		
Web	`http://www.math.uaf.edu/~maxwell`		
Text	**Calculus I**, *Larson & Edwards*, 5th edition.		

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 640 or above, or COMPASS score of 56 or higher. It is frustrating to try to learn calculus before you are ready for it.

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 Mark Layer. These recitation sections have two components. First, there will be a weekly quiz based on homework assigned the previous week. The quiz will be short and cover routine problems. Quizzes will be graded for correctness, but will be scored based only on participation. Following the quiz, some weeks there will be a worksheet-style problem for you to work on in small groups with guidance from your TA. These worksheets are not graded. There will also be an opportunity for you to ask your TA questions related to the current week's homework.

Lecture Times		
MWF	11:45–12:45	Gruening 206
T	11:30–12:30	Gruening 206

Thursday Recitations		
Section F07	9:45-10:45	Gruening 303
Section F08	11:30-12:30	Brooks 104A
Section F09	8:00-9:00	Chapman 104

Office Hours

My 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

This class has two homework components: an online component worth 12.5% of your final grade and a written component worth 12.5% of your final grade.

The online homework problems will be made available via the WebAssign system. The online assignments will be created roughly every or every other class period and will be due a few days after the problems have been posted. You should be monitoring WebAssign constantly. The online problems are more routine or computational problems. You will need the following key to log into the Web Assign system: `uaf 1894 7251`.

Each week there will also be a written assignment to be handed in at the start of Friday's class. The written assignments will comprise more sophisticated problems, for example word problems or graphing exercises. The specific homework problems to be solved will accumulate over the week and will appear on my course web site. No problems will be added after the Wednesday before the homework is due.

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). The tentative dates for the midterms are:

Friday 10/5
Friday 11/2
Friday 11/30

Final Exam

There will be a final exam held Wednesday, December 12, 10:15 – 1245:am 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:

WebAssign Homework	12.5%
Written Homework	12.5%
Quizzes	5%
Midterm 1	15%
Midterm 2	15%
Midterm 3	15%
Final	25%

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+	97–100%	C+	77–79%	F	≤ 59
A	93–96%	C	70–76%		
A-	90–92%	C-	(not given)		
B+	87–89%	D+	67–69%		
B	83–86%	D	63–66%		
B-	80–82%	D-	60–62%		

However: you must earn a C- on the final exam in order to obtain a grade of C- or better in the course.

Tentative Schedule

Week	Topics and Events
8/30 – 8/31	Day 1
9/3 – 9/7	Overview of Calculus Monday: Labor Day
9/10 – 9/14	Chapter 2
9/17 – 9/21	Chapter 3
9/24 – 9/28	Chapter 3
10/1 – 10/5	Chapter 3 Friday: First Midterm
10/8 – 10/12	Chapter 3
10/15 – 10/19	Chapter 4
10/22 – 10/26	Chapter 4 Friday: Last day to withdraw with a 'W'

Week	Topics and Events
10/29 – 11/2	Chapter 4
11/5 – 11/9	Chapter 5 Monday: Second Midterm
11/12 – 11/16	Chapter 5
11/19 – 11/23	Chapter 5 Thursday: Thanksgiving
11/26 – 11/30	Applications of Integration
12/3 – 12/7	Catch Up
12/10	Exam Week Monday: Last day of class Friday: Final Exam

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.

Collaboration

You are encouraged to work together in solving the written 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.

With respect to the online problems, you are also welcome to discuss these problems with your fellow students. But you should be aware that the online problems are randomized so that each student gets a slightly different problem. Hence your solutions will all be a little different.

Late Homework
Written 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.

Late homework (both web assign and written) will not be accepted except under extraordinary circumstances (a death in the family or a hospitalization, e.g.). Your lowest written homework score will be dropped.

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

Makeup Exams
Quizzes cannot be made up.

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.