MAC2234: Survey of Calculus II

1 Introduction

1.1 Course content

MAC2234 is a survey of integral calculus with an eye towards applications in business, social sciences, and life sciences.

1.2 Course Prerequisites

To enroll in MAC2234, you must have earned a C or higher (not a C-) in MAC2233. You may also take the ALEKS assessment (information at `http://isis.ufl.edu/aleksinfo`). If you are unsure if you meet the prerequisites, I recommend speaking to an academic advisor or making an appointment at the math department office (LIT 358).

1.3 Knowledge Prerequisites

You must be comfortable with precalculus topics, especially the basics of functions, polynomials and factoring. You will need to know how to use logarithms and exponentials. From MAC2233, you must have mastered limits, differentiation, and the basics of integration. If you are uncomfortable with any of these topics, please catch up **now**, as the course will proceed quickly assuming knowledge of these topics.

1.4 Instructor

My name is Alexander Gruber. Please address me as "Alex." I am not a formal person.

The best way to contact me is by email, at gruberan@ufl.edu. You are always free to email me questions about calculus.

My office is LIT 457, which is on the fourth floor of Little Hall.

2 Materials

2.1 Textbook

The textbook we will be using is

MAC2234 Survey of Calculus II, University of Florida. Pearson Custom-Mathematics.

2.2 Calculators

Calculators should only be necessary for numerical problems; however, you're welcome to use them whenever you like, even on quizzes and exams. The difficulty of this course lies in application, understanding, and adaption of the concepts, not in memorization or arithmetic computations. You will have to justify all the steps that you take on paper either way. I recommend bringing a calculator to class just in case. Any scientific or graphing calculators should be fine. Make sure they can take square roots, exponentials, logs, and so on.

2.3 Online resources

- Your grades will be updated regularly on Sakai, located at `http://lss.at.ufl.edu`. I will also post homework problems, quiz solutions, and all manner of other things.
- Personally, I recommend using `http://math.stackexchange.com` for online math help. (This is where I go for help on my own homework!) The population can be somewhat unfriendly to those who do not follow their guidelines, so if you choose to use this site, please read `http://meta.math.stackexchange.com/questions/9959/how-to-ask-a-good-question` before posting a question.
- I will (eventually) maintain a course homepage at

  `http://plaza.ufl.edu/gruberan/MAC2234_U14/MAC2234_U14.html`.

2.4 Other resources

- My office hours are Monday, Wednesday, and Friday, the period after class (period 3, 9:35am–10:25am). My office is LIT 457, on the fourth floor of Little Hall. In past courses, seeking help during my office hours has been strongly correlated with receiving better grades.
- The teaching center in SE Broward Hall has tutoring services geared specifically towards helping calculus students. You must attempt to solve the problems on your own before you seek help from tutors there. This summer, Broward will not be holding test reviews for MAC2234, but you can still get help during open tutoring hours or the general Calculus II hours. Their schedule is available at

http://www.teachingcenter.ufl.edu/tutoring_schedule.html

- The Office of Academic Support offers one-on-one tutoring. Their website is

  http://oas.aa.ufl.edu/tutoring.aspx

- You can find a list of private tutors from the mathematics department at

  http://www.math.ufl.edu/files/tutorlistSpring14.pdf.

3 How Course Grades Will Be Determined

Your course grade is determined 50% from exams and 50% from quizzes. In borderline cases, the higher grade will be assigned only to students who turn in their homework regularly.

3.1 Quizzes

The curriculum can be broken down into twelve topics, half of which will be considered "core" and half of which will be considered "non-core." This categorization corresponds roughly to how likely I think it is that you will use that topic in real life someday. We have thirteen weeks of class to work with, so we'll cover approximately one topic per week. There will be weekly quizzes, which are your chance to show me your level of mastery of that week's topic.

Each quiz will be awarded one of the following scores:

I Insufficient
S Satisfactory
E Excellent

Over the course of the semester, I will keep a record of your highest displayed level of performance on each topic. Then, after the final, I will determine your quiz score based on the following criteria.

A	Excellent on all topics
A-	Excellent on all core topics and four non-core topics, satisfactory on others
B+	Excellent on all core topics and two non-core topics, satisfactory on others
B	Excellent on all core topics, satisfactory on non-core topics
B-	Excellent on all core topics, satisfactory on four non-core topics
C+	Excellent on all core topics, satisfactory on two non-core topics
C	Excellent on all core topics
C-	Satisfactory on all core topics and four non-core topics
D+	Satisfactory on all core topics and two non-core topics
D	Satisfactory on all core topics

To summarize: if you have, at some point in the semester, scored excellent on all twelve topics, your quiz grade is an A. If you score excellent on all core topics, your quiz grade will at least be a C.

3.1.1 Quiz Reassessments

The advantage of this method of grading is that it specifically identifies which topics you are weakest in. To show me that you have improved on a topic in which you have received a low score, you may request a reassessment, to be administered during office hours. If your new grade is higher than your old grade, the old grade is replaced.

In general, the reassessments may be a little harder than the original quiz (mostly because I start to run out of easy problems after a while). They will still be of comparable difficulty, though.

Some rules about this:

1. To schedule a reassessment, you must email or talk to me at least three days in advance and tell me which topic you would like to be reassessed in. This is because I have to write you a new quiz, which takes time.

2. You cannot reassess on the same day that you come to my office hours for help. You are either there for help or there to reassess.

3. You may only reassess topics covered since the last exam. Aside from that, you can reassess any topic as many times as you want, so keep learning until you get it right!

4. You must have taken a quiz to reassess it. You may not reassess due to an absence.

3.2 Exams

There will be two midterms and a final. All exams will be cumulative. Since we're lucky enough to have this course during the summer, we don't have to deal with any of the obstacles that come with having a large class. This includes scantrons - all answers will be written, with work fully shown.

Exams are designed to measure your understanding of the concepts behind the techniques and your ability to adapt them to unfamiliar situations. You will be given problems much like ones you would encounter in a real world scenario.

Like the quizzes, each exam problem will be associated with a topic. The first midterm will have four problems, the second will have eight problems, and the final will have twelve problems. A perfect score on an exam problem will replace a lower quiz score on the respective topic.

Exam scores cannot be reassessed. However, a better exam grade will replace an old exam grade. So, for example, if your highest exam grade is on the final exam, that grade is your exam score. If your highest exam grade is the second midterm, your exam score is the average of the second exam and the final. If your highest exam grade is the first midterm, your exam score is either the average of all three exam grades or the average of the first exam and the final (depending on what you scored on your second exam).

3.3 Homework

I will assign and collect homework every week and keep track of who has completed it. Homework and attendance contribute to your grade *only* in the capacity stated above: to decide borderline cases.

The purpose of the homework is exercise your mechanical skills, and you are free to do it however you like. There is no such thing as cheating - the cardinal rule is, *do whatever helps you learn.* If you think copying from the solutions manual will help you, go ahead. You can also work in groups or get help on the Internet, though I recommend you at least try each problems on your own before seeking help. The thing to keep in mind is that exam problems will often be significantly more difficult than problems from the book, and as such, the homework should not be considered an indicator of your future level of performance. The book problems are rather intended as a venue to build your skills before going beyond the level of textbook exercises.

3.4 Attendance

I appreciate that this class is early in the morning, and believe me, I don't enjoy hauling myself out of bed at this godawful hour either. But if I have to do it, you have to too. Attendance counts. If you miss more than 3 days of class without a medical excuse, I will reduce your course grade once for each additional absence. (Notice that this implies that you will fail the course if you are absent one day per week.) As far as tardiness goes, if you get there after I've taken roll, that's an absence. Otherwise, it isn't.

4 Teaching Philosophy

4.1 Objective

Many calculus courses are limited to the "mechanics" of calculus - that is, the ability to blindly evaluate derivatives, integrals, and so on without thinking about what you're doing. It is true that mechanics are important. For example, it would be silly to ponder the nature of multiplication every time one had to multiply two numbers. Instead, we simply execute an algorithm that we memorized at a young age, then interpret the result as it applies to whatever situation motivated us to multiply. In the same way, it is important to build skills in the mechanics of calculus, as it is necessary for computations. However, *learning calculus* is not limited to learning its mechanics. To apply calculus in real-world situations, one must first develop a higher understanding of how calculus works so that it can be adapted to new problems and unfamiliar contexts. This higher understanding is the focus of the calculus course that I teach. The ultimate goal is to give you a practical tool that you can use in real life, so that your time (and mine) will not have been wasted.

4.2 Grading

My grading emphasizes full mastery of the course material by insisting that you must provide completely correct solutions. You cannot pass on partial credit. The upside is that you will have many tries to accomplish this over the course of the semester. You have up until the very last day to prove yourself: no matter how poorly you perform in the beginning, you always have the chance to earn an A.

4.3 Make-up Exams and Quizzes

If you miss a quiz or an exam, you can make it up during my office hours if you bring me a doctor's note. This must be done no later than two weeks after the absence.

5 Academic Dishonesty

As I said above, the homework is for you, so do whatever you want with it. The quizzes and exams, however, are for me, so don't cheat on them, as University policy would then force me to turn you over to the DSO. For more information on the ordeal that this would entail, see `http://www.dso.ufl.edu/sccr/`.