COURSE DESCRIPTION
HONORS CALCULUS II – MA 226 - 6C
SPRING 2022

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF ALABAMA AT BIRMINGHAM

Course Instructor: Professor Lex Oversteegen
Office: UH 4020
Phone#: (205) 934-2154
E-mail: overstee@uab.edu
Office Hours: Monday and Wednesday 11:30 – 12 (and by appointment)

Meeting times: MW 12:20–14:10
Meeting location: HHB 225
Prerequisite: Grade of A in MA 125, MA 225 or equivalent
Credits: 4 semester hours
Textbook: *Essential Calculus, 2nd Edition* by James Stewart, Thomson-Brooks/Cole, 2013; Topics to be covered can be found in Chapters 5 — 8 and Chapter 10. (See below for more detail.)

Important dates:

First day of class: January 10, 2022
Martin Luther King, Jr. Holiday: Monday, January 17, 2020
Last day to drop/add without paying full tuition: January 18, 2022
Last day to withdraw with a "W": March 22, 2022
Spring Break: March 14–20, 2022
Last day of class: April 22, 2022

Major exams (tests):
Test I: near Monday, January 31;
Sections: 4.3–4.5, 5.1 – 5.3, 5.6;
Test II: near Monday, February 28;
Sections: 6.1–6.3, 6.6, 7.1–7.3, 7.6;
Test III: near Monday, March 28;
Sections: 10.1–10.5, 10.7 – 10.8;
Test IV: near Wednesday, April 13;
Sections: 5.8, 8.1 – 8.7

(These dates are approximate and may be slightly shifted due to unforeseen circumstances.)

Final exam: Wednesday, April 29, 1:30 PM – 4:00 PM (Location to be announced.)

Date: January 3, 2022.

Course policies:

- Please make sure that you are able to receive e-mail through your Blazer-ID account. Official course announcements may be sent to that address.
- If your are contacted by the Early Alert Program, you should consider taking advantage of the services it offers. Various services to assist you are also listed in the *Student Resources* section of the *Blazernet* web site.
- If you wish to request a disability accommodation please contact DSS at 934-4205 or at *dss@uab.edu*.
- If a test is missed due to serious verifiable circumstances or official university business, the test grade will be replaced with the properly rescaled final exam score. You must advise the instructor of such circumstances **before** the exam takes place. A missed final exam gets a score of zero.
- No books or use of phones will be allowed during any of the tests or quizzes.
- Calculators which do not have access to the internet will be allowed during tests and/or quizzes.
- A $5'' \times 8''$ Quick Reference Card made by the student will also be allowed on all major exams (tests and final exam), **but not on quizzes**.

Assessment procedures:

- Student achievement will be assessed by the following measures:
  - **Four in class tests** including short questions (Part I) as well as problems requiring in depth understanding (including word-problems). Partial credit is awarded where appropriate. Each test contributes 10% to the course average.
  - **Students' presentations** count for 20% of the grade (the semester will be split in half after the second exam–10% can be earned in each half). Normally, a student will present twice a week, and not more than four times a week (see the part of this document entitled "How this class works" for the additional explanation).
  - **A 150-minute comprehensive final examination** including Part I and Part II type problems. The final contributes 25% to the course average.
  - **Attendance** in the course is crucial for your success and counts for 10% of the grade. The roll will be taken in the beginning of every class. If you are unable to attend class, you must email me **BEFORE** that class take place and bring me a verifiable excuse later.
  - **A project assigned during the term.** The project contributes 5% to the course average.
- Your course performance is your course average (including the final exam score). This is a number between 0 and 100.
- Your final grade is determined according to the following table:

Course performance:	88-100	75-87	62-74	50-61	below 50
Final Grade:	A	B	C	D	F

- In addition your grade maybe raised by a strong performance on the final exam (normally at most one letter grade).

Tips:

- Help is available in the Math Learning Lab (HHB 202); M–Th, 9:00 AM –8:00 PM, F 9:00 AM –3:00 PM. It is closed during official UAB holidays and breaks. Limited hours are available during final exams.
- Past exams given in Calculus II are posted on the math dept website

  www.uab.edu/cas/mathematics

  for student practice. Click on *Calculus Testbank* under the *Resources* and *Student Resources* links.
- By working steadily and regularly, you will increase your chances to succeed in this course.
- Remember, being a full-time student is a full-time job.

Sections to be covered: *Essential Calculus, 2nd Edition* by James Stewart, Thomson-Brooks/Cole, 2013.

- Review for Chapter 4: 4.2 – 4.5.
- Review for Chapter 5: 5.1 – 5.3.
- Chapter 5: 5.6, 5.8.
- Chapter 6: 6.1 – 6.3, 6.5 – 6.6.
- Chapter 7: 7.1 – 7.3, 7.6.
- Chapter 8: 8.1 – 8.7.
- Chapter 10: 10.1 – 10.5, 10.7 – 10.8

HOW THIS CLASS WORKS [1]

This class will be taught in a way that is likely to be different from mathematics classes you have encountered in the past. Much of the class will be devoted to students working problems at the board and much of your grade will be determined by the amount of mathematics that you produce in this class.

I use the word produce because the best way to learn mathematics is by doing mathematics. Therefore, just as I learned to ride a bike by getting on and falling off, I expect that you will learn mathematics by attempting it and occasionally falling off!

You will be expected to work assigned problems from the book and present some of them on the board. I urge you to seriously consider the value of becoming an independent thinker who tackles doing mathematics, and everything else in life, on your own rather than waiting for someone else to show you how to do things.

A Common Pitfall

There are two ways in which students can approach this class. The first is to say, I will wait and see how this works and then see if I like it and put some problems up later in the semester after I catch on.

Think of the course as a forty-yard dash. Do you really want to wait and see how fast the other runners are? If you try every night to do the problems then you may get a problem (Yay!) and be able to put it on the board with pride and satisfaction. Alternatively, you will struggle with the problem, learn a lot in your struggle, and then watch someone else

[1] We are indebted to Professor Ted Mahavier, a pioneer of the problem-based approach to learning calculus, for the description of how this class works (for additional information go to `www.jiblm.org`).

put it on the board. When this person puts it up you will be able to ask questions and help yourself and others understand it. And then you can say to yourself, "Ahhhh, now I see where I went wrong and now I can do this one and a few more for next class."
If you do not try problems each night, then you will watch another student put the problem on the board. Most likely you will not quite catch all the details. Then, when you study for the tests or try the next problems, you will have only a loose idea of how to tackle such problems. Basically, you have seen it only once in this case. The first student saw it once when s/he tackled it on her/his own, again when either s/he put it on the board or another student presented it, and then a third time when s/he studies for the next test or quiz.
Hence the difference between these two approaches is the difference between participating and watching a movie. I hope you all will choose to participate and, as a consequence, will benefit the most from the class!

Board Work

Let us put your mind at ease regarding this part of the class. First, by coming to class everyday you will earn 10% of your course grade! Every problem you present pushes your grade higher. Here are some rules and guidelines associated with the board work.

- I will call for volunteers every day and will pick the person with the least presentations to present a given problem. **I will only select from the group of students who uploaded their solutions on canvas hence make sure that you upload your problems before the due date and time!** You may inform me that you prepared a problem in advance (which I appreciate), but the problem still goes to the person with the least presentations on the day I call for a solution.
- Ties are broken randomly before the first test. Once the first test has been returned, ties are broken by giving precedence to the student with the lower last test score. A student who has not gone to the board on a given day will be given precedence over a student who has gone to the board that day.
- To present a problem at the board means to have written the problem statement up, to have written a correct solution using complete mathematical sentences, and to have answered all students questions regarding the problem.
- Since you will be communicating with other students on a regular basis, here are several guidelines that will help you.
  - Most importantly, remember that the whole class is on your side and wants to see you succeed, so questions are intended to help everyone, not to criticize you.
  - When you speak, do not use the words obvious, stupid, or trivial.
  - Do not attack anyone personally or try to intimidate anyone. Do not get mad or upset at anyone. If you do, try to get over it quickly.
  - Do not be upset when you make a mistake - brush it off and learn from it. Do not let anything go on the board that you do not fully understand. Do not say to yourself, I will figure this out at home.
  - Do not work together without acknowledging it at the board.
  - Do be polite and respectful.
  - Do let people answer when they are asked a question.

- Do not use concepts we have not defined. Do not use or get examples or solutions from other books.
- Do not try to put up a problem you have not written up. Do prepare arguments in advance.
- Do learn from your mistakes.
- Do refer to earlier results and definitions by number when possible.

How to Study each Day

1. Read over your notes from class that day and the relevant section(s) of the textbook.
2. Make a list of questions to ask me at the beginning of the next class. (I love these!)
3. Review the recent problems.
4. Work on several new problems and read the appropriate new section of the textbook.
5. Write up as many solutions as you can so that you can copy these onto the board the next day.

Common Courtesies for Any Class:

- Putting your head on your desk resting or sleeping during class is rude. If you need sleep, please go to your room or home - not to class.
- If you need to leave class early, it is polite to tell the instructor before the class starts. Class attendance is expected.
- Please arrive for class a few minutes early so that class can begin without interruption. If there is a problem, let the instructor know.
