

**COURSE DESCRIPTION
HONORS CALCULUS I
MA 225–CT, 59092
FALL 2022**

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF ALABAMA AT BIRMINGHAM

Course Instructor: Professor Lex G. Oversteegen
Office: UH 4020
Phone#: (205) 934-2154
E-mail: overstee@uab.edu
Office Hours: Monday, Wednesday 9–10 AM (or by appointment)

Meeting times: MTWTh, 8–8:50 AM

Meeting location: UH 4002

Prerequisite: Grade of C or better in MA 106, MA 107 or equivalent. *Any student who has not fulfilled the prerequisite will be dropped from the class.*

Credits: 4 semester hours

Textbook: *Essential Calculus — second edition* by James Stewart, Thomson-Brooks/Cole, 2013, 2007; ISBN-13: 978-1-133-11229-7. Topics to be covered: Chapters 1 — 5.3.

Important dates:

First day of classes: August 22, 2022

Labor Day Holiday: Monday, September 5, 2022

Last day to withdraw with a “W”: October 14, 2022

Fall/Thanksgiving Break: November 21–November 25, 2022

Last day of class: December 1, 2022

Major exams (tests): Test I: near Thursday, September 15; Sec. 1.1–1.6, 2.1–2.4;
Test II: near Tuesday, October 11; Sec. 2.5–2.8, 3.1–3.5;
Test III: near Tuesday, November 1; Sec. 3.7, 4.1–4.5;
Test IV: near Wednesday, November 16, Sec. 3.6, 5.1–5.3.

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

Final exam: Wednesday, December 07, 2022, 1:30–4 PM (Location to be announced.)

NOTE DATE AND TIME OF FINAL EXAM!!

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 you 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 a serious verifiable circumstance or official university business, the test grade will be replaced with the final exam score. Otherwise, if you miss an exam you will receive a zero score for this exam. In the unlikely event when two or more midterm tests are missed due to a serious verifiable circumstance or official university business, the matter will be resolved on the case by case basis in cooperation between the student, the instructor, and the coordinator of Calculus I classes. In any case you **must** inform your instructor of such circumstances **before** the exam takes place.
- Calculators (without internet access) will be allowed during any of the tests or quizzes. In addition, students can bring one quick reference card to tests, including the final exam (i.e., a standard size 5" × 8"-index card; both sides can be used).

The men who try to do something and fail are infinitely better than those who try to do nothing and succeed. - Martin Lloyd Jones

- A large fraction (22%) of your grade will be determined by presentations and attendance (to understand what this means you must read the part of this syllabus entitled "How this class works").
- Class meetings of 50 minutes consisting of student presentations, lectures and discussions of examples and homework problems. Time also includes quizzes, and four in-class tests.
- Students are expected to undertake at least 10 hours of private study and homework per week.
- The online homework system WebAssign will **not** be used.

Assessment procedures:

- Student achievement will be assessed by the following measures:
 - **Quizzes.** Problems on tests are modeled after homework problems. Staying on top of homework is therefore extremely important. Quiz problems are similar to the homework problem sets. This allows students to gauge whether they are ready to work problems in a test situation. Quizzes count for 3% of the course average.

- **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 12% to the course average.
- **Students’ presentations** count for 17% of the grade¹ Normally, a student will present at most twice a week, and not more than three times a week (see the part of this document entitled “How this class works” for additional explanation).
- **A 150-minute comprehensive final examination** including Part I and Part II type problems. The final contributes 27% to the course average.
- **Attendance** in the course is required, crucial for your success and counts for 5% of the grade. If you are unable to attend class, you must email me **BEFORE** that class takes place and bring/Email me a verifiable excuse later.
- 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).
- **MA125/225 CLASSES ARE NOT ELIGIBLE FOR PASS/FAIL GRADING.**

Sections to be covered:

Essential Calculus, second edition by James Stewart, Thomson-Brooks/Cole, 2013, 2007, ISBN-13: 978-1-133-11229-7.

- Chapter 1: 1.1 – 1.6.
- Chapter 2: 2.1 – 2.8.
- Chapter 3: 3.1 – 3.7.
- Chapter 4: 4.1 – 4.5.
- Chapter 5: 5.1–5.3.

HOW THIS CLASS WORKS ²

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 presenting solutions to homework problems and much of your grade will be determined by the amount of mathematics that you produce in this class.

¹Points will be collected separately in the first half of the term (up to the second exam) and the second half of the term. Each part will count for 8.5%.

²We 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).

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 to the class. 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 present it to the class with pride and satisfaction. Alternatively, you will struggle with the problem, learn a lot in your struggle, and then watch someone else 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 present problems. 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!

PRESENTING PROBLEMS

Let us put your mind at ease regarding this part of the class. First, by attending class everyday you will earn 5% 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. 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. **Note that I will only select students for presentations from those who have uploaded solutions on canvas for the relevant section.**
- 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 up the problem statement and a correct solution which uses 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 and have them ready at the start of class.
 6. Keep a list of all problems you presented and the date you presented them. Keep a running total number of your presentation points so you know when you can present a problem for additional points.
-

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 at class a few minutes early so that class can begin without interruption (and I know you are able to present a solution). If there is a problem, let the instructor know.