MAT-113 Calculus II Spring 2023

Section A: MWF 1:30-2:20, Chambers 1062

Section B: MWF 2:30-3:20, Chambers 3068

Instructor: Claire Merriman

Email: clmerriman@davidson.edu

Office: Chambers 3043

Office Hours: TBD

Embedded Tutor: Vincent Reynolds

Email: vireynolds@davidson.edu

Location: TBD

Office Hours: TBD

Embedded Tutors: Guil Ware

Email: guware@davidson.edu

Location: TBD

Office Hours: TBD

Course Grades:

Preparation Assignments	5%
In Class Activities	5%
Homework	15%
Written Investigation	20%
Midterm Reviews	45%
Final Review	20%

Grading Scale:

A	93-100	A-	90-92		
B+	87-89	B	83-86	B-	80-82
C+	77-79	C	73-76	C-	70-72
D+	67-69	D	60-66	F	0-59

Written Investigation Due Dates:

February 10, March 17, April 14, May 2

Review Dates:

February 17, March 31, April 28

May 6-12: Self Scheduled Final Review

Course Information

This course covers a lot of different topics in calculus.

We start with an introduction to techniques and applications of integration, which will show that integration is far more complicated than derivation. Then we will learn about infinite series including convergence tests and Taylor series, which are a different way of exploring infinity. Finally, we will look at more geometric concepts of calculus on parametric and polar curves; and concepts in 3-space including vectors, lines, planes, and vector-valued functions.

In particular, we will cover Chapters 7-10 of our textbook, as well as Sections 6.1-6.5 and the first part of Chapter 11.

Textbook and Software

Textbook: *Calculus: Early Transcendentals, Eleventh Edition*, by Howard Anton, Irl Bivens and Stephen Davis. You should be able to purchase this from the bookstore or from an online bookstore. This book is the standard Calculus textbook at Davidson as two of the authors are emeritus faculty in the math/cs department. Note that the *Late Transcendentals* version covers some of the calculus 1 material in a different order (for example, L'Hôpital's Rule is Section 3.6 in Early Transcendentals and Section 6.5 in Late Transcendentals!)

3D Graphing: We will use GeoGeobra as an online calculator for some preparation assignments. You can use the browser version or the apps. While you do not need to make an account to complete the assignments for class, it would be helpful to make an account and save your work. Guided GeoGebra activities are at: https://www.geogebra.org/m/k83at2nr.

In Class Work: You will work on problems with your classmates in class. You should bring a pen or pencil to work on the paper copies of any individual problems, as well as contribute to groupwork.

Online Assignment Submission: Preparation assignments will be submitted and graded on Moodle.

Learning Outcomes

Upon successful completion of the course, students will be able to:

- Use definite integrals to find volume and area and solve some applied problems
- Find anti-derivatives using various integration techniques and determine which technique to use
- Evaluate some classes of improper integrals.
- Determine convergence or divergence of sequences and series using various convergence tests
- Use Taylor and MacLaurin series to represent functions.
- Use Taylor or MacLaurin series to integrate functions not integrable by conventional methods.
- Plot parametric and polar equations and use calculus techniques to find tangents and areas
- Plot functions in 3-space including vectors, lines, planes, and vector-valued functions

Classroom Expectations

Learning mathematics requires you *do* mathematics. This means that you will spend part of class working on math problems, and you will have times that you struggle to solve them. The goal is for this to be a *productive struggle*, where you emerge with a greater understanding of the concepts.

It is also important that you come to class on time having completed the preparation assignment for the day and stay until the end of class.

I expect this course to be a place where you will be treated with respect. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class.

The topics in this course may also be more or less familiar depending on what other courses you have taken. If you have already seen a concept that we cover in class, view this as an opportunity to learn about it from a different perspective and practice explaining math to others.
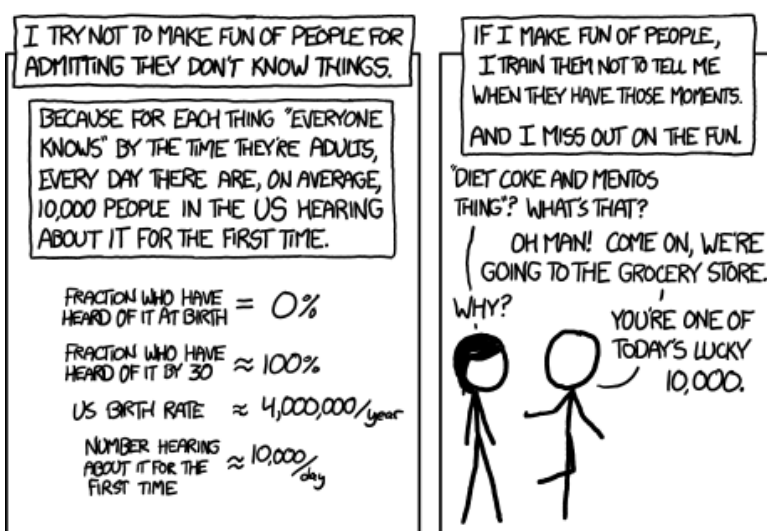
Conduct violating the Student Handbook, including Honor Code violations and discrimination or harassment based on race, color, national origin, religion, gender, orientation, age or disability will not be tolerated. Contributing to a hostile classroom environment may result in lost points on In Class Activities.

Assignment Descriptions

Preparation

You will have short assignments due before the start of each class to get familiar with the topics we will cover in class. Sometimes these questions will be short calculations, but they will often ask you to explain steps in the examples given in the textbook. These questions will be graded on a mix of completion and accuracy with the following rubrics:

0 points: Missing or minimal effort, such as only writing down the problem or a definition.
1 point: Contains a reasonable attempt to answer at least one question with significant mathematical errors or omissions (such as only answering one of two questions).
2 points: Contains a reasonable attempt to answer all questions with some mathematical errors.
3 points: Answers to all questions demonstrate understanding of the mathematical concepts, possibly with some minor errors.

Preparation assignments for the week will be available on the preceding Saturday. These assignments have a soft deadline of 12:30 pm the day of class and will **not be accepted more than 5 minutes after the start of class**. I will do my best to grade any assignments submitted by the soft deadline before the start of class and use the answers to adjust the lecture for the day. There is no late penalty for turning in the preparation assignments by the start of class.

The lowest 2 grades will be dropped.

In class activities

You will have problems to work on in groups throughout class time. These will range from calculation problems that check for understanding to more in-depth problems that benefit from group discussion. I will provide paper copies at the start of each class and collect them at the end of class. We may also do some other activities throughout class.

I will only grade one submission per group, so you should all work together. These problems typically require some amount of discussion. Often homework problems are continuations of the group questions.

In class activities are primarily graded on completion. These are an opportunity for feedback before homework.

Lowest 3 grades will be dropped.

Homework

Homework assignments will cover the material from the previous lecture, in class activities, and preparation assignments. You are encouraged to work together on the problems; however, you must write up your own solutions and submit them individually.

All homework assignments must have a correctly completed **Homework Cover Sheet**, found in the General Course Materials section of Moodle.

Homework is due at the beginning of class. There are no homework assignments during the weeks with a Review. Late homework assignments will receive a 20 percentage-point penalty per day, unless you are using one of your late passes or I have granted an extension before the assignment is due. You may not use more than one late pass per assignment.

Assignments should be legible–you should work out problems then write up a new, final version. Homework should be on a separate page or in a separate file from you course notes. Problems or assignments that are messy may result in lower grades.

You may rewrite up to six of your homework assignments. The rewrite is due at the beginning of the next class after assignments are returned, one week after the original due date unless there is a delay in grading the first submission. You must have submitted a reasonable attempt at every problem on the first submission and turned it in on time (unless using a late pass). A reasonable attempt at a problem includes enough work for the grader to provide feedback—this could be an explanation of approaches you have tried or information that you know is relevant to the problem. You are responsible for keeping track of when you have used all of your rewrites.

Written Investigations

There will be four Written Investigation assignments that explore the topics in greater depth. The problems may involve short writing assignments or applications of the material to other fields.

You may work with your classmates on the problems; however, you must write up your own solutions and submit them individually. You may not use any outside sources, unless directed by the problem instructions. GeoGebra and standard graphing calculators are allowed.

Late written investigations will receive a 20 percentage-point penalty per 24 hours, unless you are using one of your late passes or I have granted an extension before the assignment is available for completion. You may not use more than one late pass per assignment. You may rewrite your written investigation at the cost of two homework rewrites.

Reviews

There will be three midterm reviews. These reviews are in class and closed notes. The questions will be similar to the homework exercises, preparation assignments, and in class activities.

The final review is cumulative and taken in the Chambers Exam Center.

Ways to get help

The best way to succeed in this course is to ask for help before you fall behind. This includes working with your classmates and asking questions during class. Here are other ways to get help:

- **Office hours**: Office hours are a time I am in my office to help you with the material in the course. They can also be a time to meet or work with other students in the class.
- **Embedded tutors**: Your primary source of peer learning support and assistance for this course should be our embedded tutors. Please attend their scheduled help sessions, visit them in their office hours, and ask them questions through e-mail or our online platforms. The exact schedule for help sessions and office hours with the embedded tutor(s) will be announced shortly.
- **Slack:** For questions about course material or logistics, check the Slack—someone else may have already asked the same question. If not, you should post, as other students likely have the same question. Other students in the course and the embedded tutors can answer your questions in Slack.
- **Email**: For questions containing private information such as grades or absences, contact me by email. I will respond to Slack messages and emails within 24 hours on weekdays.
- **Study Groups**: I strongly encourage you to work with your peers on homework and when studying for reviews
- **Math and Science Center (MSC)**: Our embedded tutors should be your primary source for peer assistance and learning support this semester. The Math & Science Center (MSC) will also have a small number of additional peer tutors available on a drop-in or by-appointment basis. The embedded, drop-in, and by-appointment tutors are trained and highly qualified peers that demonstrated deep understanding and succeeded in this course themselves. Located in the Center for Teaching & Learning (CTL) on the first floor of the College Library, the MSC's drop-in hours are Sunday through Thursday, 8-11 PM, beginning Sunday, January 22. Prior to visiting for drop-in help, be sure to look at the tutor schedules to determine when an appropriate tutor for your course/topic will be present. Tutor schedules for drop-in assistance, as well as links to schedule an appointment with a tutor, can be found at https://www.davidson.edu/offices-and-services/center-teaching-and-learning/student-resources/math-science-and-economics-center (click on "Meet with Math or Science Tutor"). Peer assistance is free to Davidson students at the point of service. For more information, contact Dr. Mark Barsoum, Director of the CTL (mabarsoum@daivdson.edu or ext. 2796).

Other course policies

Make-up Policy

If you need to miss class due to excused absence, we will schedule a time for you to complete the in-class assignments. Note: this is not a replacement for attending class and intended for short term (less than one week) illnesses, family emergency, college sponsored travel, or religious holidays. Some excused absences may require documentation.

If you are dealing with longer term illnesses or other life events that are interfering with your ability to attend class or complete assignments, reach out to me about how to handle assignments. These may require documentation.

Honor Code

The Honor Pledge of Davidson College states: "On my honor I have neither given nor received unauthorized information regarding this work, I have followed and will continue to observe all regulations

regarding it, and I am unaware of any violation of the Honor Code by others." This pledge applies to all work for our course.

Your preparation assignments and homework assignments will be submitted individually. Though you may discuss your solutions with any of your classmates, you are expected to write your final submissions on your own. If you work on a problem with someone else (in or out of class) you should acknowledge this collaboration on the cover page for the homework assignments and on the preparation assignments.

Any copying of work which is not your own is an Honor Code violation. In addition, allowing others to copy your work (in person or by making it available electronically) is an Honor Code violation. Honor Code violations will be reported to the Honor Council. Assignments with Honor Code violations will receive a 0.

If you use a source that is not our textbook, course notes, or a resource on Moodle, you must cite them on the cover page for the assignment. You do not need to use any specific format for your citations–just provide enough information that I can find the resource. You may not look up solutions to any problem assigned in the course on the internet. Once you have seen a full solution, it is not possible to independently develop a solution.

Academic Access

The college welcomes requests for accommodations related to disability and will grant those that are determined to be reasonable and maintain the integrity of a program or curriculum. To make such a request or to begin a conversation about a possible request, please contact the Office of Academic Access and Disability Resources, which is located in the Center for Teaching and Learning in the E.H. Little Library: Beth Bleil, Director, bebleil@davidson.edu, 704-894-2129; or Alysen Beaty, Assistant Director, albeaty@davidson.edu, 704-894-2939. It is best to submit accommodation requests within the drop/add period; however, requests can be made at any time in the semester. Please keep in mind that accommodations are not retroactive.

Important Dates

January 17	Classes Begin
January 17 (7 am)- 20 (5 pm)	Add/Drop Week 1 available to all students on Banner Self-Service
January 20 (5:01 pm)- 27 (5 pm)	Add/Drop Week 2 available through the Add/Drop Permission Form only ($20 fee).
	Drops not permitted after January 27.
March 6-10	Spring Break, No Classes
April 7	April Break, No Classes
May 4-5	Reading Day, No Classes
May 6-12	Final Exams for Non-Seniors
May 6-8	Final Exams for Seniors