

MATH 131: CALCULUS I

Fall 2020

Instructor:	Dr. Matthew McCurdy
Email:	matthew.mccurdy@trincoll.edu
Lecture Time:	MWF 12:40pm - 1:30pm, T 11:15am - 12:30pm
Lecture Hall:	McCook 303

Office Hours: MWF 1:30-2:30pm, T 2:15-3:30pm, remote with Zoom link on Moodle.

I recognize that these office hours may not fit perfectly into everyone's schedule. However, I'm happy to meet outside of these office hours! You may schedule an appointment with me via e-mail. There are times when my schedule can be extremely busy, but I will try my best to find a time we can schedule an appointment.

Course Description: Calculus is a transitional course to upper-division mathematics courses as well as courses in other divisions like computer science, physics, and engineering. Students will extend their experience with functions to study the two fundamental concepts of differential calculus: limits and derivatives. Important objectives of the calculus sequence are to develop and strengthen students' problem-solving skills and to teach them to read, write, speak, and think in the language of mathematics. In particular, students will learn how to apply the tools of calculus to a variety of problem situations. This course is not centered on mere computation and number-crunching; we will aim for an understanding of differential calculus that is intuitive and theoretical. Additionally, there will be an emphasis on presenting clear, concise arguments in a logical and coherent manner.

For students who have had calculus before, this course will not be a strict repeat of what you've seen in high school. As indicated above, the course is purposely crafted so as to place intuitive understanding and theoretical foundations on an equal or higher level of importance than computation and application of formulas.

This is a 1.25-credit course. Accordingly, it is expected that on this course, a student will spend an average of approximately 10 hours per week outside of class studying and completing assignments.

Prerequisites: A satisfactory score on the Math Placement Exam, or C- or better in MATH 127.

Course Page: Course announcements, resources, and homework will be posted on the Moodle page. It is your responsibility to check the Moodle site regularly and to read the announcements carefully. Additionally, you are expected to check your student e-mail daily. An additional site with links to helpful Desmos graphs and other supplemental materials is available at:

<https://calculus.domains.trincoll.edu>

Textbook: Reading and homework will be taken from: *Calculus* by Laura Taalman and Peter Kohn.

Note: The textbook from the bookstore comes bundled with WebAssign access that will be valid for up to three semesters of Calculus classes. If you buy the book elsewhere, it probably **does not** come with WebAssign access, which you will need to purchase individually from the publisher's website. If you're okay with an E-text, that option is available as well!

Lectures: You are expected to attend and participate in lectures! Partial lecture notes will be posted online. Students have found it beneficial to print the notes before class and fill them in during lecture. You are in no way required to use them though! Some sections have more material than we will talk about in lecture. Examples we do not cover in class are still good problems to practice for homework and in preparation for exams. If you miss a class for any reason, it is your responsibility to catch up on the work that you missed.

Assessments: Your final grade for the course will be determined by

Assessment	Date	Weight
Quizzes/ in-class work	Throughout semester	15%
Participation	Throughout semester	10%
Homework	Throughout semester	15%
Tests	6 Oct., 27 Oct.	10% each
Midterm, Final Exam	17 Nov., Finals week	20% each

Attendance Policy: Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official college activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness. A medical excuse must state explicitly that the holder should be excused from class. Note that students will not be given excused absences to attend family functions or other non-academic events. Registered Student Organizations and Greek Life activities are not considered official college activities. Students must provide advance notice of absences (when possible) as well as relevant documentation regarding absences to the instructor as soon as possible following the illness or event that led to an absence.

If a test absence is excused, then at the instructor's discretion, a make-up exam will be arranged. Students that do not contact the instructor to provide documentation or do not arrange for a makeup exam within a week of the absence will not be excused. If a student has an unexcused absence from the scheduled makeup exam, no additional makeup exam will be scheduled, and the exam will be treated as an unexcused absence.

Homework: will be assigned each week. Assignments will be completed on WebAssign weekly, and several written problem sets will be assigned and collected throughout the semester as well. (Written problem sets will likely be scanned and submitted on Moodle as .pdfs.) Assignments should be completed and turned in prior to the beginning of the class when they are due. Late assignments will be penalized 30% per day.

You are responsible for self-enrolling in WebAssign using the class key **trincoll 9736 6684**. You are also responsible for checking the website for due dates. Typically there will be an assignment for each of 1-2 sections from the text, with 1-2 assignments due each week.

Quizzes/ in-class work: will be assigned in lecture throughout the semester. Like the written problem sets, these assignments will likely be scanned by students and submitted on Moodle as well. An emphasis will be placed on presenting clear, concise arguments to effectively communicate ideas in a logical and coherent manner. Make-up quizzes will not be given.

Tests, and Final: will be taken during lecture. Tests 1 and 2 will each count for 10% while the cumulative Midterm and final will each count for 20%. Tests will be based roughly on lecture and homework material. The tests will not be rescheduled for any reason. An unexcused absence from a test will be penalized. The final exam will be cumulative and will be based on all lecture and homework material covered in the course.

Grading Policy: For most assignments, I will annotate your .pdf submissions on Moodle and assign the grade there. It is your responsibility to make sure the grades on your assignment match those recorded in Moodle. *You have one week from the moment grades have been assigned to you to alert your instructor of a grading error.* Your final letter grade will be determined from your final numerical grade according to

Grade	A- to A+	B- to B+	C- to C+	D- to D+	F
Score	90 - 100	80 - 89	70 - 79	60 - 69	0 - 59

Plus or minus grades may be assigned.

Preparing for remote classes: Before our class (and any other courses you have!), you should try to create an environment around you that's conducive for learning. Some tips for this are:

- Find a quiet location to work where you won't be interrupted,
- Work on each subject a little each day to help stay you on track,
- If possible, have earphones/earbuds available,
- Make sure your electronic devices are charged,
- Have your course materials (paper, pencils/pens, etc.) with you before class begins.

If/when we switch to remote instruction, there will be 'test assignments' to ensure that students are able to submit assignments on Moodle correctly. Additionally, I expect students to have their cameras on during remote lectures to encourage participation and promote accountability. If this is an issue, please speak with me before class.

You will need a variety of tools to take this course online if we switch to remote instruction. The particular apps you use will depend on your hardware. Verify that you have the hardware and software needed for each of the following activities. If you don't have the necessary resources and need help locating or acquiring them, please contact me and I can help you find the appropriate resources on campus.

- Make sure you have the latest version of Zoom and Chrome or FireFox.
- You will need to be able to show work on assessments. This will involve creating files containing images of your work. The files must be saved as .pdf. If you create a file type different from these you will need to check with your instructor to see if your instructor can read it. Options with showing your work are:
 - Using a tablet with pencil and an app like notability.
 - Writing your work on clean paper with a blue or black pen and then scanning the work. Popular scanning apps for smart phones are Genius Scan or CamScanner.
 - Taking a picture of written work. With pictures, you will need to make sure your file size is not too large to transfer easily and that you have the ability to export them as pdfs.
- You will need to be able to upload the images of your work to Moodle and the process needs to be quick and easy. Possibilities include:
 - Upload straight from your device on which the image is created and saved. Note that some but not all phones are capable of uploading files to Moodle quizzes.
 - Use a file transfer app to move the file from your phone to your computer to upload. For example: Airdrop, OneDrive, Dropbox, Google Drive.
 - E-mail from your phone to your computer. This is usually the slowest and least reliable method.

Academic Honor Policy: In accordance with the Trinity College [Student Integrity Contract](#), students are expected to abide by the highest standards of intellectual honesty in all academic exercises. Intellectual honesty assumes that student do their own work and that they credit properly those upon whose work and thought they draw. It is the responsibility of each student to make sure that they are fully aware of what constitutes intellectually honest work in every exam, quiz, homework, or other academic exercise submitted for evaluation in a course at Trinity College. Academic dishonesty will result in a score of zero on the exam, quiz, or assignment in question, or a grade of F for the course.

Civility Policy: Lectures are devoted time for learning. Activities that interfere with this process will not be tolerated. Failure to comply will result in you being kicked out of the lecture, and will impact your final grade.

Americans with Disabilities Act: Students with disabilities needing academic accommodation should

1. register with and provide documentation to the Student Accessibility Resources Office; and
2. communicate with the instructor indicating the need for accommodation and what type.

Trinity College is committed to creating an inclusive and accessible learning environment consistent with the Americans with Disabilities Act. If you have approval for academic accommodations, please notify faculty during the first two weeks of the semester or a minimum of 10 days prior to needing your accommodations. Please be sure to meet with me privately to discuss implementation. This syllabus and other class materials are available in alternative format upon request. For more information about services available to Trinity students with disabilities, contact the:

Student Accessibility Resources Office

Level A of the Raether Library and Information Technology Center (LITC)

(860) 297-4025

Email: Lori.Clapis@trincoll.edu

<https://www.trincoll.edu/sarc/>

Free Tutoring From Trinity: is available at the [Aetna Quantitative Center](#).

Student Responsibilities: You are expected to keep up with the class and engage with the course material. Midterms and exams are expected to be products of individual students as per the Trinity College Academic Honor Policy. You are welcome to collaborate with your peers on homework problems and preparation questions.

Syllabus Change Policy: Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice.

Learning Goals: In this course, we will quickly recall (in Ch 0) some essential facts about functions of a single real variable and their graphs before undertaking a treatment of differential calculus (in Ch 1-3). Throughout, we will focus on gaining a strong intuitive, geometric, and formal understanding of important definitions, theorems, methods, and applications:

- (Ch 1) Understand the concept of “limit,” its essential role in defining “continuous” functions, and important properties of continuity, especially the Intermediate Value Theorem. Be able use algebraic techniques, and results from the class to calculate limits for a wide variety of elementary functions.
- (Ch 2) Understand the concept of “derivative,” especially how it is defined using a limit, and how it may be interpreted as a rate of change, or the slope of a tangent line. Be able to use algebraic techniques, and results from the class to calculate derivatives for **all** elementary functions.
- (Ch 3) Understand the application of the above to fundamental problems in geometry, physics (especially motion), economics (especially marginal quantities), and other disciplines. Be able to solve various “word problems” using techniques of calculus, especially “related rates” and optimization problems. Be able to sketch accurate graphs given information about the derivatives.
- Learn fundamental ideas and techniques for modeling with differential equations.
- Be able to communicate mathematics effectively, using complete sentences which blend the English language with mathematical definitions, notation and accompanying figures.

Tentative schedule of topics:

Date	Week	Topics
7-11 Sept.	Week 1	0.1, 0.2, 0.3, 0.5, 1.1
14-18 Sept.	Week 2	1.1, 1.2, 1.4
21-25 Sept.	Week 3	1.4, 1.5, 1.6
28 Sept.- 2 Oct.	Week 4	1.6, 2.1, 2.2
5-9 Oct.	Week 5	2.3, Test 1
12-16 Oct.	Week 6	2.4, Interlude 1
19-23 Oct.	Week 7	2.4, 2.5, 3.5, Interlude 2
26-30 Oct.	Week 8	2.6, Test 2
2-6 Nov.	Week 9	3.1, Interlude 3
9-13 Nov.	Week 10	3.2, 3.3
16-20 Nov.	Week 11	3.5, Midterm (cumulative)
23-27 Nov.	Thanksgiving break	
(Remote) 30 Nov.- 4 Dec.	Week 12	3.4, Interlude 4
(Remote) 7-11 Dec.	Week 13	3.4, 3.6
(Remote) 12-14 Dec.	Review period	
(Remote) 15-21 Dec.	Final exam (cumulative)	