

Math 1210 * Calculus I

University of Utah
Summer 2021

Course Information:

Lecture: M - F 12:00 - 1:30 PM (see Canvas for Zoom access information)

Instructor Information:

Name: Thomas Hill
Office Hours: TBA
or by appointment
Email: thill@math.utah.edu

Prerequisite(s):

C or better in (((MATH 1050 AND 1060) OR MATH 1080 OR (MATH 1060 AND Accuplacer CLM score of 80+)) OR AP Calc AB score of 3+ OR Accuplacer CLM score of 90+ OR ACT Math score of 28+ OR SAT Math score of 630+.

Topics:

Functions and their graphs, differentiation of polynomial, rational and trigonometric functions. Velocity and acceleration. Geometric applications of the derivative, minimization and maximization problems, the indefinite integral, and an introduction to differential equations. The definite integral and the Fundamental Theorem of Calculus.

Course Description:

What is Calculus? In calculus, as in algebra, we will study variables, functions, and relations. However, in calculus, we will study these topics using the mathematical concept of a *limit*. Limits allow us to solve problems for which algebra alone is inadequate. The concept of a limit is found in all aspects of calculus. There are two major worlds that can be explored once we define and incorporate the concept of a limit. The first, *differential calculus*, involves studying the behavior of functions and its changes within an infinitely small region. Examples of such behavior include when a function is increasing or decreasing and where a function has maxima or minima. The second, *integral calculus*, involves “adding” an infinite number of infinitely small quantities together to answer questions about area, accumulation, and averages. The Fundamental Theorem of Calculus is a powerful mathematical result that relates differential and integral calculus.

Why study Calculus? Calculus can be described as a study of how things change. Calculus provides a framework for modeling phenomena in which there is change, along with a way to make predictions according to those models. It was developed in the middle of the 17th century by Isaac Newton and Gottfried Leibniz to describe planetary motion. Today, calculus is the essential language of science, engineering, finance, and business, providing the means by which real-world problems are expressed in mathematical terms.

Textbooks and Course Materials:

We will use the text: Calculus with Differential Equations, by Varberg, Purcell, and Rigdon (9th edition).

All course materials, including lecture notes, assignments, and external resources, will be provided on our course canvas page at <https://utah.instructure.com> and will be updated regularly.

Here is a tentative outline of the sections we will cover in this course.

Dates	Sections covered (subject to change)	Exams
6/14 - 6/18	1.1, 1.2, 1.3, 0.7, 1.4, 1.5	Exam 0
6/21 - 6/25	1.6, 2.1, 2.2, 2.3, 2.4, 2.5	Exam 1
6/28 - 7/2	2.6, 2.7, 2.8, 2.9 3.1, 3.2	Exam 2
7/5 - 7/9	3.3, 3.4, 3.5, 3.6, 3.7, 3.8	Exam 3
7/12 - 7/16	3.9, 4.1, 4.2, 4.3, 4.4, 4.5	Exam 4
7/19 - 7/23	4.6, 5.1, 5.2, 5.3, 5.4, 5.5	Exam 5
7/26 - 7/30	Review	Exam 6

For a list of other important dates see: <https://registrar.utah.edu/academic-calendars/summer2021.php>

Grades:

The grades in this course will not be curved. The grades will be based on each student's individual performance. This allows the possibility for everyone in this course to earn a satisfactory grade. Grades will be weighted as follows:

1. 10% Attendance and Participation
2. 30% Homework
3. 50% Exams
4. 10% Exit Interview

A letter grade will be assigned from the percentage of total points using the grading scale:

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

“+” and “-” grades will be awarded at the discretion of the instructor. The instructor retains the right to modify this grading scheme during the course of the semester; students will, of course, be well notified of any adjustments.

Attendance and Participation 10%: Once a week, a lecture “participation” component will be checked for completion. This will be either attendance at a select lecture or participation in a poll during the lecture. Students will not know ahead of time what aspect will be graded. A discussion post with mathematical content during the week (M-F) will also count for the week's participation. The lowest participation grade will be dropped.

Homework 30%: Homework will be assigned weekly and will be due each Friday. Homework will be submitted on gradescope. Each homework will consist of two parts: (1) Skills Practice: this component will not be turned in or graded and consists of problems that could be asked during the exit interview; (2) Communication Comprehension: this component will be graded.

The importance of homework cannot be understated. Most people (including and perhaps especially seasoned mathematicians) find that to understand a mathematical concept one must get their hands dirty and do problems. For this reason, homework will be given (and due) weekly.

If you find that you are struggling with the homework or that problems are taking exorbitant amounts of time, please seek out help as soon as possible. There are a variety of resources to help make your learning experience the best possible.

When writing the solutions to the homework problems, show all work, being clear and explicit with each step. Unclear or mysterious work may not receive credit. Just as in other academic subjects, avoid submitting your “first draft” in mathematics. Working through problems on scratch paper and then revising your work when writing up a final complete solution will often reveal errors or misunderstandings that can be used as opportunities to grow.

Many people find that improving the neatness and organization of their work almost immediately improves their ability to understand the mathematics they are doing. For this reason, points may be deducted for sloppy or unreadable work.

Collaboration on assignments is encouraged - but this does not mean splitting the problems between members of a group. Rather, this means working through problems individually or together and comparing solutions. Plagiarism is not acceptable. You should credit the students with whom you worked at the top of each assignment, and all students should submit their own solutions.

All homework must be submitted online. Homework turned in within a week after the due date will be accepted for half the points (late assignments will not be accepted after one week).

Exams 50%: There will be a weekly proctored 20 - 30 minute in class exam each Friday. Calculators and computing apps/programs will not be allowed. Exams will be closed note/closed book. Communication with others during the exam, either in-person or electronically, is not allowed. You will be expected to have your microphone and camera on during the exam. You will receive very explicit instructions on how to set up and prepare for the exam proctoring session. Students who do not follow these instructions risk receiving a zero on the exam. See the section below on Academic Misconduct.

Exit Interview 10%: During the last week of class 7/26 - 7/30 or between 8/4 - 8/6 students will need to schedule an appointment on canvas for an exit interview. Students will be asked to present 1 - 3 randomly selected problems from the Skills Practice section of the homework assignments given throughout the semester. No notes, calculators, or other resources will be allowed. This will be held over Zoom and students will need to arrange for a way to annotate on the Zoom whiteboard to present their solutions.

Class Policies:

- *Policy:* Homework turned in within a week after the due date will be deducted 50% of the grade.
Reasoning: Timely and prompt completion of assignments is crucial for your understanding.
- *Policy:* Unreadable or unorganized work will not receive credit.
Reasoning: Your understanding of the mathematics you are doing will increase drastically if your work is clear and organized.
- *Recommendation:* Working together on the homework is strongly encouraged. However, plagiarizing another's work is not acceptable. Each student must submit their own solution.
Reasoning: Collaboration requires oral communication, which facilitates written communication. Explaining your solution to another will positively affect the quality of your work and understanding.
- *Policy:* Evidence of cheating (i.e., copying) on an assignment will result in a zero for that assignment. Evidence of cheating on two or more assignments will result in failure of the course. Cheating includes, but is not limited to, copying another student's assignment or plagiarizing solutions from a solution guide, online-published solutions, etc.
Reasoning: All students should understand the Student Code spelled out in the Student Handbook, and conduct themselves with the foremost level of academic integrity. The complete Student Code can be found on the university website.

Academic Misconduct: Students are encouraged to work together while studying for this class. It is acceptable to discuss the homework and quizzes with your fellow students, however, any submitted work or answers should be your own. Generally speaking, academic misconduct happens when you present someone else's work as your own. Examples of academic misconduct include (but are not limited to): turning in homework copied from (or largely based upon) the solutions found in the textbook solutions manual, using calculators or computing programs on exams, receiving solutions or answers from other classmates or outside resources during an exam or quiz. Students engaging in academic misconduct will receive a zero on the assignment/exam in question and will be reported to the College of Science following the math department's guidelines. Students will typically receive one warning before a report is filed when the assignment in question is a homework. Any instances of academic misconduct on an exam will be reported.

Student Responsibilities: All students are expected to maintain professional behavior in the classroom setting, according to the Student Code, spelled out in the Student Handbook. Students have specific rights in the classroom as detailed in Article III of the Code. The Code also specifies proscribed conduct (Article XI) that involves cheating on tests, plagiarism, and/or collusion, as well as fraud, theft, etc. Students should read the Code carefully and know they are responsible for the content. According to Faculty Rules and Regulations, it is the faculty responsibility to enforce responsible classroom behaviors, and I will do so, beginning with verbal warnings and progressing to dismissal from and class and a failing grade. Students have the right to appeal such action to the Student Behavior Committee. <http://regulations.utah.edu/academics/6-400.php>

Accommodations: The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability & Access, 162 Olpin Union Building, 801-581-5020. CDA will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability & Access.

Addressing Sexual Misconduct: Title IX makes it clear that violence and harassment based on sex and gender (which Includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veterans status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).

Student Names and Personal Pronouns: Class rosters are provided to the instructor with the students legal name as well as Preferred first name (if previously entered by you in the Student Profile section of your CIS account). While CIS refers to this as merely a preference, I will honor you by referring to you with the name and pronoun that feels best for you in class, on papers, exams, group projects, etc. Please advise me of any name or pronoun changes (and update CIS) so I can help create a learning environment in which you, your name, and your pronoun will be respected. If you need assistance getting your preferred name on your UIDcard, please visit the LGBT Resource Center Room 409 in the Olpin Union Building, or email bpeacock@sa.utah.edu to schedule a time to drop by. The LGBT Resource Center hours are M-F 8am-5pm, and 8am-6pm on Tuesdays.

Wellness Statement: Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a students ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness at www.wellness.utah.edu or 801-581-7776.

Safety Statement: The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu.