

**Class Meetings:**

1210–13, MWF, 1:25 PM – 2:45 PM, AEB 350

**Class Meetings:**

Section 014: H at 12:55 – 1:45 PM in JWB 208, Section 015: H at 2 – 2:50 PM in JWB 333

**Instructor:** Delaney Mosier, delaney@math.utah.edu, delaney.mosier@gmail.com

**Office Hours:** Monday 3:00 PM – 4:00 PM in LCB 326, Thursday 10:00 AM – 11:00 AM on Zoom, and by appointment. Times and location subject to change.

**Learning Assistants:** Drew Jensen, u1216702@utah.edu

**Text:** *Calculus with Differential Equations, 9th Edition*, Varberg, Purcell, and Rigdon

For information on purchasing the textbook, go to <http://www.math.utah.edu/schedule/bookInfo/>

**Final Exam:** Friday April 29, 1:00 PM – 3:00 PM

**Course Information:** Math 1210 Calculus I is a 4 credit course.

**Course Description:** 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.

**Canvas:** Canvas will be used for posting course announcements, homework assignments, grades, files and any relevant supplementary material. You are also welcome to make use of the Canvas discussion board to discuss course problems or topics. You can access the Canvas page through CIS or by logging in at [utah.instructure.com](http://utah.instructure.com). Students should check the Canvas page regularly for course information and resources. Email notifications and correspondence will be sent to the student's UMail address ([u-number]@utah.edu); this email account must be checked regularly.

**Labs:** Every Thursday, Learning Assistant (LA) directed lab sections will be held. These lab sections are **required**, they will have much smaller class sizes, and you will work on lab worksheets in groups. The LA will be there to help guide students through the problems. The worksheets will typically be due at the end of the lab period.

**Grades and Exams:**

- (45%, 15% each) **Midterm Exams:** Three 60-minute midterm exams taken during your class time on select Fridays. A review sheet will be posted a week prior to the midterm that will cover the relevant material. Dates of the midterm exams will be Friday February 4th, Friday March 4th, and Friday April 8th. **No makeup exams will be given** in general. Contact the instructor in advance via email or in person if you believe you have a case for an exception to this policy.
- (25%) **Final Exam:** A 2-hour comprehensive final exam will be given on Friday April 29, 1:00 PM – 3:00 PM. A review sheet will be posted prior to the exam that will cover the relevant material. **No makeup exam will be given.**
- (20%) **Comprehension Quizzes:** Weekly quizzes taken during class every Friday (except for midterm exam days). These quizzes will be composed of a few (2-3) problems taken from weekly homework assignments. These homework assignments from the text will not be collected or graded. Your incentive to do the homework is to

enhance your learning, as well as to give you a tremendous advantage on the weekly quiz. **No makeup quizzes will be given**, so your **two lowest** quiz scores will be dropped.

- **(10%) Lab Participation and Worksheets:** Lab scores are computed weekly and based 50% on attendance and participation in the lab session and 50% on the submitted worksheet. Therefore, simply participating in every lab will comprise 5% of your total grade and another 5% will be based on the completion of the lab report. The lab worksheets will typically be due at the end of the lab period and one group member will be required to upload the work electronically to Canvas. The **two lowest** lab scores will be dropped. Labs cannot, in general, be made up if missed.

Students with university excused absences (band, debate, student government, intercollegiate athletics) should make alternate arrangements with me as soon as possible if the absence interferes with any course components.

**Path to success in this class.** **1.** Complete your homework assignments – even though they will not be collected, they will help you immensely in preparing for the weekly comprehension quizzes. **2.** Prepare for and actively participate in the labs. **3.** Use the exam review sheets – know how to solve the problems there, as well as problems like them. **4.** There are 2 dedicated people (Delaney and Drew) who really care, and who are there to help you, answer your questions, and help facilitate your success. Please use these valuable resources, that's what we're here for!

**Final Course Grades:** Final course letter grades will be determined as follows: If  $X$  is your course percentage weighted according to the above, then  $\{X \geq 93\% \implies A, X \geq 90\% \implies A-, X \geq 87\% \implies B+, X \geq 83\% \implies B, X \geq 80\% \implies B-, X \geq 77\% \implies C+, X \geq 73\% \implies C, X \geq 70\% \implies C-, X \geq 67\% \implies D+, X \geq 63\% \implies D, X \geq 60\% \implies D-, X < 60\% \implies E\}$ . Traditional rounding will be used to the nearest whole number. For example, at the end of the semester if your grade is an 89.51, then you will receive an A-. 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. No individual adjustments will be made to final grades.

### **Additional Resources:**

- **Tutoring Center & Computer Lab:** There is free tutoring in the T. Benny Rushing Mathematics Student Center (room 155, the lower level between JWB and LCB), as well as a computer lab.  
For more information see <http://www.math.utah.edu/undergrad/mathcenter.php>
- **Private Tutoring:** University Tutoring Services, 330 SSB. There is also a list of tutors at the math department office JWB 233.
- **Departmental Videos:** The math department has a full set of lecture videos which you are welcome to use to supplement our course material. These can be found at <http://www.math.utah.edu/lectures/>

**Calculators:** Calculators will not be allowed on exams. They may be used on homework, but you should still write out the details of your computation. It is in your best interest not to become too dependent on your calculator since they will not be allowed on exams.

## Expected Learning Outcomes

Upon successful completion of this course, a student should be able to:

1. Take limits of algebraic and trigonometric expressions of the form  $0/0$  (that simplify), non-zero number over 0, including limits that go to (positive or negative) infinity, limits that don't exist and limits that are finite.
2. Use and understand the limit definitions of derivative for polynomial, rational and some trigonometric functions; understand the definition of continuity and consequences.
3. Differentiate all polynomial, rational, radical, and trigonometric functions and compositions of those functions; perform implicit differentiation and compute higher order derivatives.
4. Use differentiation to find critical points and inflection points, the signs of the first and second derivatives, and domain and limit information to determine vertical and horizontal asymptotes. Then use all of that information to sketch the graph of a curve,  $y = f(x)$ .
5. Apply differentiation to optimization, related rates, linear approximation, and problems involving differentials
6. Compute indefinite integrals and find antiderivatives, including finding constants of integration given initial conditions.
7. Compute definite integrals using the definition for simple polynomial functions. Compute definite integrals using the power rule, basic u-substitution, and the Fundamental Theorems of Calculus.
8. Apply the definite integral to compute area between two curves, volumes of solids of revolutions, arc length, surface area for surfaces of revolution, and work problems.

## Important Dates:

Classes begin	Monday, January 10
Last day to add without a permission code	Friday, January 14
Martin Luther King Jr. Day	Monday, January 17
Last day to drop (delete) classes	Friday, January 21
Last day to add, elect CR/NC, or audit classes	Friday, January 21
Midterm 1	Friday, February 4
Presidents Day	Monday, February 21
Last day to withdraw from classes	Friday, March 4
Midterm 2	Friday, March 4
Spring Break	Sunday, March 6 – Sunday, March 13
Midterm 3	Friday, April 8
Last day to reverse CR/NC option	Friday, April 22
Classes end	Tuesday, April 26
Final Exam	Friday, April 29

## COVID-19 Statement

University leadership urges all faculty, students, and staff to model the vaccination, testing, and masking behaviors we want to see in our campus community. These include:

**Vaccination:** Get a COVID-19 vaccination if you have not already done so. Vaccination is proving highly effective in preventing severe COVID-19 symptoms, hospitalization and death from coronavirus. Vaccination is the single best way to stop this COVID resurgence in its tracks. Visit <http://mychart.med.utah.edu/>, <http://alert.utah.edu/covid/vaccine>, or <http://vaccines.gov/> to schedule your vaccination.

**Masking:** While masks are no longer required outside of Health Sciences facilities, UTA buses and campus shuttles, CDC guidelines now call for everyone to wear face masks indoors.

**Testing:** If you are not yet vaccinated, get weekly asymptomatic coronavirus tests. This is a helpful way to protect yourself and those around you because asymptomatic individuals can unknowingly spread the coronavirus to others. Saliva based testing is available at [alert.utah.edu/covid/testing](http://alert.utah.edu/covid/testing)

**Self-Reporting:** All of us, including faculty, students, and staff, must self-report if we test positive for COVID-19 via this website: <https://coronavirus.utah.edu/>.

**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>

**ADA Statement:** 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, veteran's 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 student's 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](mailto: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 student's ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness at [www.wellness.utah.edu](http://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](http://safeu.utah.edu).

**Final Remarks:**

- In a regular semester, per university policy “A University credit hour shall represent approximately three clock hours of the student's time a week for one semester” (<https://regulations.utah.edu/academics/6-100.php>). Therefore, in a regular semester since this is a 4 credit class you should plan to spend 12 hours a week on this course.
- There will be plenty of opportunities to discuss and work examples with your classmates during each lecture. Therefore, please refrain from side conversations during lecture as it is distracting both to me and to other students.
- I am always happy to answer any questions, therefore if you have any confusion **please ask questions**. If you are uncomfortable speaking during class you are encouraged to come ask questions during office hours or email me.

**Course Outline: (Subject to Change)**

January	10-14	Introduction, 0.7, 1.1-1.3	Real Numbers, Functions, Limits	
	19-21	1.4-1.5	Limit Theorems	
	24-28	1.6, 2.1-2.2	Continuity, The Derivative	
February	31-4	2.3-2.4	Finding Derivatives	EXAM I (Feb. 4)
	7-11	2.5-2.6	Chain Rule; Motion	
	14-18	2.7-2.9	Applications of Derivatives	
	23-25	3.1-3.3	Maxima and Minima	
March	28-4	3.4	Practical Optimization Problems	EXAM II (March 4)
	14-18	3.5-3.7	Graphing, Mean Value Theorem	
	21-25	3.8-3.9	Antiderivatives; Differential Equations	
April	28-1	4.1-4.3	Area, Riemann Sums and Integrals	
	4-8	4.4-4.5	Fundamental Theorem of Calculus	EXAM III (April 8)
	11-15	4.6, 5.1-5.2	Applications of Integrals	
	18-22	5.3-5.4	Volumes, Arc Length	
	25	5.5	Work, Moments, Probability	
May	28-4			FINAL EXAMS