

## MATH 1210-010 Calculus I, Spring 2022

**Class Meetings:** Lecture T/Th 4:35-6:35PM in PAB 103

**Lab Meetings:** Section 11 (9874) M 3:05-3:55 PM LCB 121, Section 12 (9875) M 4:10-5:00 PM LCB 121, Section 20 (14597) M 5:15-6:05 LCB 121

**Instructor:** Carrie Bala

**Email:** bala@math.utah.edu, carrie.bala@wasatch.edu, or through Canvas

**Office Hours:** by appointment or via Zoom

**Learning Assistant:**

**LA Office Hours:**

**Text:** *Calculus with Differential Equations*, by Varberg, Purcell, and Rigdon (9<sup>th</sup> edition).

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

ISBN-10: 0132306336; ISBN-13: 9780132306331

This text is the required book for Calculus I, II, and III.

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

**Prerequisite Information:** "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+.

**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 through Canvas; please check this account regularly.

**Grading:** The following are the grade components and the percentage each contributes to a student's final grade:

**Homework assignments (12.5%).** Roughly three textbook sections of homework will be due each week Thursday at the beginning of class, including weeks of exams. The homework will typically cover material up to and including the preceding Tuesday. The Assignments tab on Canvas contains a list of assigned problems for each assignment. Three of the problems from each assignment will be selected for grading by the grader, each graded out of 5 points. There will also be 5 points given for completion. The lowest homework score will be dropped. Homework will be turned in electronically in Canvas. Late homework is, in general, not accepted.

**Labs (12.5%).** Every Monday a Learning Assistant (LA)-directed lab section will be held. These lab sections will have smaller class sizes, consisting of working 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 and one group member will be required to upload the work electronically to Canvas. One half of the lab grade will be given for timely attendance, the remaining half of the lab grade will be based on completion of the lab reports. The two lowest lab scores will be dropped. Labs cannot, in general, be made up if missed.

**Exams (50%, 16.6% each).** Three 50-minute midterm exams will be given on a select Thursday. A practice exam will be posted a week prior to each exam that will cover the same materials. Dates of the exams will be Thursday February 3<sup>rd</sup>, Thursday March 3<sup>rd</sup>, and Thursday April 7<sup>th</sup>.

**Final Exam (25%).** A two-hour comprehensive exam will be given. As with the midterm exams, a practice final exam will be posted a week prior. Our final exam is scheduled for Thursday April 28<sup>th</sup> from 6-8PM in PAB 103.

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.

**Final course letter grades** will be determined as follows:

A	≥88%	B+	≥82%	C+	≥67%	D+	≥52%
A-	≥85%	B	≥73%	C	≥58%	D	≥43%
		B-	≥70%	C-	≥55%	D-	≥40%
						F	<40%

The instructor retains the right to modify this grading scheme during the course of the semester; students will be well notified of any adjustments.

### Additional Resources

**Tutoring Center & Computer Lab.** 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.** Learning Center <https://learningcenter.utah.edu>

**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 students are expected to write out the details of their computation.

**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 limit 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  $y = f(x)$ .
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.

**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.

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 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, 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 pronouns will be respected. If you need assistance getting your preferred name on your U-ID card, please visit the LGBT Resource Center Room 409 in the Olpin Union Building, email [lgbtrc@sa.utah.edu](mailto:lgbtrc@sa.utah.edu), or call 801-587-7973.

**Classroom Social Equity:** I strive to be ethical, kind, fair, inclusive, and respectful in my classroom and expect students to behave likewise. In this regard, I request the following of students:

1. Please discreetly tell me if you have any anxiety disorder, TBI, PTSD, C-PTSD, or any other challenge with which being called on would cause you psychological harm. I request that you stretch yourself during class or small-group discussion, but I do not want to push too far.
2. If your preferred name is different than your legal first name, please login to Canvas and go to Account and Settings and change your Display Name to be the name you prefer. This will greatly help me in learning best how to communicate with you.
3. Please maintain professional behavior in the classroom setting, according to the Student Code, spelled out in the Student Handbook.
4. If you feel, at any time, that this course or the curriculum is not equitable, please email or meet with me to discuss your concerns.

**ADA Statement:** The Americans with Disabilities Act requires that reasonable accommodations be provided for students with physical, cognitive, systemic, learning, and psychiatric disabilities. A qualifying student needs to have such a disability approved by the Center for Disability Services (162 Olpin Union Building, 581-5020) in order to have the accommodations provided. The instructors need to be informed about such a disability and approved accommodations at the beginning of the semester. The Center for Disability Services will work with students and the instructor to make arrangements for accommodations. All information in this course can be made available in alternative format with prior notification to the CDS.

**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 on the basis of your sex, office for

equal opportunity and affirmative action including sexual orientation or gender identity/expression, you are encouraged to report it to the University's Title IX Coordinator; Director, Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, <https://oeo.utah.edu/contact-us/index.php> or to the Office of the Dean of Students, 270 Union Building, 801-581-7066, <https://deanofstudents.utah.edu/>. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to police, contact the Department of Public Safety, 801-585-2677(COPS), <https://police.utah.edu/>.

**Campus Safety:** 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).

**University Counseling Center:** The University Counseling Center (UCC) provides developmental, preventative, and therapeutic services and programs that promote the intellectual, emotional, cultural, and social development of University of Utah students. They advocate a philosophy of acceptance, compassion, and support for those they serve, as well as for each other. They aspire to respect cultural, individual and role differences as they continually work toward creating a safe and affirming climate for individuals of all ages, cultures, ethnicities, genders, gender identities, languages, mental and physical abilities, national origins, races, religions, sexual orientations, sizes and socioeconomic statuses. The UCC staff is committed to supporting the mental health needs of our campus community. Their phone number is 801-581-6826. Their hours are Monday-Friday, 8:00am-5:00pm. For after-hours emergencies, contact the 24/7 Crisis Line: 801-587-3000 . More information is at <https://counselingcenter.utah.edu/>

**Office of the Dean of Students:** The Office of the Dean of Students is dedicated to being a resource to students through support, advocacy, involvement, and accountability. It serves as a support for students facing challenges to their success as students, and assists with the interpretation of University policy and regulations. To contact the Office of the Dean of Students, please email [deanofstudents@utah.edu](mailto:deanofstudents@utah.edu) or call 801-581-7066. There is more information at <https://deanofstudents.utah.edu/>

**Student Success Advocates:** The mission of Student Success Advocates is to support students in making the most of their University of Utah experience ([ssa.utah.edu](http://ssa.utah.edu)). They can assist with mentoring, resources, etc. Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact a Student Success Advocate for support (<https://asuu.utah.edu/displaced-students>).

### Tentative Schedule

Jan 11 Introduction chapters 1.1-1.3	Jan 13 Pre-Assessment
Jan 18 Ch. 0.7, 1.4, 1.5	Jan 20 Note: Last day to drop 1/21
Jan 25 Ch. 1.6, 2.1, 2.2	Jan 27
Feb 1 Ch. 2.3, review	Feb 3 Exam 1
Feb 8 Ch. 2.4-2.6	Feb 10

Feb 15 Ch. 2.7-2.9	Feb 17
Feb 22 Ch. 3.1, 3.6, 3.2	Feb 24
Mar 1 Ch. 3.3, review	Mar 3 Exam 2 Note: Last day to withdraw 3/4
Mar 8 Spring break	Mar 10 Spring break
Mar 15 Ch. 3.5, 3.4, 3.7	Mar 17
Mar 22 Ch. 3.8-4.1	Mar 24
Mar 29 Ch. 4.2-4.4	Mar 31
Apr 5 Ch. 4.5, 4.6, Review	Apr 7 Exam 3
Apr 12 Ch. 5.1-5.3	Apr 14
Apr 19 Ch. 5.4-5.5	Apr 21 Review
April 26 Review	Apr 28 Final Exam 6-8PM

**Disclaimer:** The instructor reserves the right to modify this syllabus to better suit class needs at any time during this semester. Any changes that are made will be immediately communicated during class and via Canvas.