

MATH 1210-010 Calculus I, Spring 2020

Class Meetings: Lecture: TuTh at 3:40-5:40pm in JTB 140

Lab Meetings: Section 011: Mo at 3:05-3:55pm in LCB 225; Section 012: Mo at 4:10-5:00pm in LCB 225; Section 020: Mo at 5:15-6:05pm in BU C 211

Instructor: Prof. Emily Stark

Email: stark@math.utah.edu

Office Hours: Room JWB 110. Monday 2-3pm, Wednesday 2-3pm.

Learning Assistant: Sushi Murthy

LA Office Hours: TBA.

Text: *Calculus with Differential Equations*, by Varberg, Purcell, and Rigdon (9th edition)

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

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. 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.

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

- **Homework Assignments (12.5%)**- An assignment will be due most weeks on Thursday at the beginning of class. The homework will typically cover three textbook sections of material, which will be covered in the classes preceding the assignment. If you click on a homework assignment in the Assignments tab in Canvas, you will see the list of assigned problems. Three of the problems 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 only be accepted in class; no electronic copies will be accepted. No late homework will be accepted, unless accompanied by a doctor’s note or other verification of extenuating circumstance.
- **Labs (12.5%)**- Every Monday a Learning Assistant (LA)-directed lab section will be held. These lab sections will have smaller class sizes, and will consist 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. One half of the lab grade (about 6% of the total course grade) will be given for attendance, the remaining grade (about 6% of the total course grade) will be based on the quality of the lab reports. The lowest lab score will be dropped.
- **Midterm Exams (50%, 16.6% each)**- Three 80-minute midterm exams will be given in class. A practice exam will be posted a week prior to the midterm that will cover the same material. Dates of the midterm exams will be Tuesday, Feb. 4th, Tuesday, Mar. 3rd, and Tuesday, Apr. 7th.
- **Final Exam (25%)**- A two-hour comprehensive final exam will be given. As with the midterms, a practice final will be posted a week prior. Our final exam is scheduled for Wednesday, Apr. 29th from 3:30-5:30 pm. The exam will be held in our classroom JTB 140.

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

Final grading scale: Final course letter grades will be determined as follows. If X is your course percentage weighted according to the scheme above, then

$X \geq 93 \Rightarrow A$; $93 > X \geq 90 \Rightarrow A-$; $90 > X \geq 87 \Rightarrow B+$; $87 > X \geq 83 \Rightarrow B$; $83 > X \geq 80 \Rightarrow B-$;

$80 > X \geq 77 \Rightarrow C+$; $77 > X \geq 73 \Rightarrow C$; $73 > X \geq 70 \Rightarrow C-$; $70 > X \geq 67 \Rightarrow D+$;

$67 > X \geq 63 \Rightarrow D$; $63 > X \geq 60 \Rightarrow D-$; $60 > X \Rightarrow E$.

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.

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-** ASUU Tutoring Center, 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 $y = f(x)$.
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.

Course Roadmap Week-by-Week: Below is an outline of the sections and topic covered in this course. Schedule and lab topics subject to change.

Week 1 Introduction, Chapters 1.1-1.3

Week 2 Chapters 0.7, 1.4, 1.5 (Lab: algebra review) (Note, Friday Jan. 17th is the last day to drop)

Week 3 Chapters 1.6, 2.1, 2.2 (Lab: limit basics)

Week 4 Chapters 2.3-2.4, review, (Lab: limits and infinities)

Week 5 Chapters 2.5-2.6 (Lab: exam review) *Exam 1, Feb. 4*

Week 6 Chapters 2.7-2.9 (Lab: derivative as a limit)

Week 7 Chapters 3.1-3.3 (Lab: derivative rules)

Week 8 Chapters 3.4-3.5, review, (Lab: linearization and differentials)

Week 9 Chapter 3.6-3.7 *Exam 2, Mar. 3* (Lab: exam review) (Note, Friday Mar. 6th is the last day to withdraw)

Week 10 Spring break, March 8 - March 15

Week 11 Chapters 3.8-4.1 (Lab: optimization)

Week 12 Chapters 4.2-4.4 (Lab: graphing functions & MVT)

Week 13 Chapters 4.5, 4.6, review, (Lab: antiderivatives and applications)

Week 14 Chapters 5.1-5.2 *Exam 3, Apr. 7* (Lab: exam review)

Week 15 Chapters 5.3-5.4 (Lab: evaluating definite integrals)

Week 16 Chapter 5.5, review (Lab: applications of integration)

Week 17 *Final Exam Wednesday, Apr. 29th from 3:30-5:30pm.*

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, 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).

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.

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.