# MATH 1210-001 Calculus I, Summer 2021

**Class Meetings:** Lecture: M-F at 7:30am-8:30am via Zoom
**Instructor:** Hanlin(Johnny) Cai
**Email:** Hanlin.Cai@utah.edu
**Office Hours:** TBD
**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 cblackit 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.

**Course Structure:** This a synchronous online course (IVC) which will meet via Zoom at the class meeting times. Students will be requiblack to access the class Zoom meetings using their university zoom account. Attendance is strongly encouraged but not requiblack. Class lectures will be recorded and posted to Canvas, however, there is course participation component which will be met by regular attendance (see section on Grading below).

Canvas will be used for posting course announcements, homework assignments, grades, files and any relevant supplementary material. You are also welcome to make use if 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 (35%)**- Roughly four textbook sections are due most Fridays at the beginning of class (including days of exams, but not the week following). The homework will typically cover material coveblack up to and including the preceding Monday. If you click on a homework assignment in the Assignments tab in Canvas, you will see the list of assigned problems. Five of the problems will be selected for grading by the grader, each graded out of 7 points. The lowest homework score will be dropped. You'll submit the homework on Gradescope. Late homework is, in general, not accepted.

- **Quizzes (5%)**- In the last 15 minutes of every Wednesday class (except for Wednesdays before and after a midterm exam), a short 1-2 problem quiz testing fundamentals will be given. The quiz will cover relevant topics coveblack in the previous week's lectures. Potential quiz topics will be posted on Canvas. The lowest quiz score will be dropped.

- **Midterm Exams (60%, 15% each)**- Four 60-minute midterm exams will be given on four select Tuesdays. Exams will be proctoblack via Zoom. You will have the whole class period to complete the exam. 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 Jun. 8th, Tuesday Jun. 29th, Tuesday Jul. 20th, Tuesday Aug. 3rd.

  Calculators and computing apps/programs will not be allowed. Communication with others during the exam, either in-person or electronically, is not allowed. You will be expected to have your microphone 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.

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: If X is your course percentage weighted according to the above, then $\{X \geq 88\% \Rightarrow A, X \geq 85\% \Rightarrow A-, X \geq 82\% \Rightarrow B+, X \geq 73\% \Rightarrow B\ , X \geq 70\% \Rightarrow B-\ , X \geq 67\% \Rightarrow C+\ , X \geq 58\% \Rightarrow C, X \geq 55\% \Rightarrow C-\ , X \geq 52\% \Rightarrow D+\ , X \geq 43\% \Rightarrow D\ , X \geq 40\% \Rightarrow D-\ , X < 40\% \Rightarrow E\}$.
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.

**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 or quiz. Any instances of academic misconduct on an exam will be reported.

**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.

**COVID-9 Considerations:** Students must self-report if they test positive for COVID-19 via 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, 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 Preferblack first name (if previously enteblack 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 preferblack 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.

**Course Roadmap Week-by-Week:** Below is an outline of the sections and topic coveblack in this course. We have three holidays: Memorial Day (Monday May 31st), Independence Day (Monday July 5th), and Pioneer Day (Friday July 23rd).

**Week 1** Introduction, Chapters 1.1-1.3, 0.7:

**Week 2** Chapters 1.4-1.6, 2.1 **Note, Wednesday May 26 is the last day to drop**

**Week 3** Chapters 2.2-2.4

**Week 4** Chapters 2.5-2.6, review, Exam 1 (Jun. 8)

**Week 5** Chapters 2.7-2.9, 3.1

**Week 6** Chapters 3.2-3.6 **Note, Friday June 25 is the last day to withdraw**

**Week 7** Chapter 3.7, 3.8, review, Exam 2 (Jun. 29)

**Week 8** Chapters 3.9, 4.1-4.2

**Week 9** Chapters 4.3-4.6

**Week 10** Chapters 5.1, review, Exam 3 (Jul. 20)

**Week 11** Chapters 5.2-5.5

**Week 12** review, Exam 4 (Aug. 3)