Syllabus subject to change: This syllabus is meant to serve as an outline and guide for our course. Please note that I may modify it with reasonable notice to you. I may also modify the Course Schedule to accommodate the needs of our class. Any changes will be announced in class and posted on Canvas.

MATH 1210-001 Calculus I, Fall 2020

Instructor: Seungsu Lee, Ph.D candidate in mathematics
Email: slee@math.utah.edu
Office Hours: Monday and Wednesday 11-12 a.m through Zoom, or by appointment.
Class Type: IVC (Interactive Video Conferencing) - synchronous online
Class Meetings: Lecture: MoWeFr / 08:05 am - 09:25 am through Zoom. The Zoom address will be posted through the canvas.

Learning Assistant: Leo Zhang (sections 002 and 003)
LA Office Hours: TBA.
Lab Meetings:

- Section 002: H at 07:30 am - 08:20 am

- Section 003: H at 08:35 am - 09:25 am

Technical Requirements: Students are expected to be computer literate, with the ability to **navigate Canvas and Zoom**. These skills are critical for accessing all features and resources of this course. For the online synchronous course components, a strong internet connection and adequate bandwidth is needed. Tests will be proctored using Zoom with video enabled, so students are required to have a working **webcam**. Note that a phone with a webcam is sufficient if no laptop is available. For exam submissions, students are strongly required to have **a printer and a scanner or alternative scanning apps** for smartphones. For technical assistance, review the Canvas Getting Started Guide for Students and/or contact TLT, Knowledge Commons.

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/

- Class notes which is posted on our Canvas web page. You will need to print those out and bring them to class, because I'll refer to them regularly.

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.

Course Structure Overview: This course is flipped, which means that students are expected to watch a lecture video before class, to get acquainted with the new material. At that point, students are likely still confused about the new mathematics, but they have an introduction to the main ideas. The in-class time then is spent working on or practicing more problems that cover that same content. It's called a flipped structure because we have intentionally flipped where the lecture and first set of practice occurs, compared to a traditional lecture course. There is much research to date regarding flipped classrooms in STEM courses, at the collegiate level, that suggests that flipped classrooms can provide a more equitable class. In other words, a flipped classroom, statistically, serves students at least as well as other active-learning strategies, and much better in many instances. Compared to a traditional lecture format, literally any amount of active, engaged learning that happens in class is better, for STEM courses. Much research continues to prove that claim. A flipped classroom is just one of many active-learning course structures that are helpful for students to learn.

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 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:

- **Daily Quizzes (20%)**- There will be 20 to 30-minute quizzes on Canvas that opens every Monday, Wednesday and Friday morning at 9:25 a.m. and closes the same by 11:59 pm, including exam weeks. You will need to complete that online quiz on your time, outside of class hours, every Monday, Wednesday and Friday. Each daily quiz will be one to four questions about the material covered in class/video lecture that day. If you are keeping up with the work, these quizzes should be reasonably straightforward. There will be a total of about 37 of these quizzes. I will drop the lowest eight scores.

- **Labs (15%)**- Every Thursday 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. One third of the lab grade (5% of the total course grade) will be given for attendance, the remaining grade (10% 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%, $3 \times 15\% + 5\%$)**- Four 50-minute midterm exams will be given on select days. A practice exam will be posted a week prior to the midterm that will cover the same material. Your lowest midterm score will count for 5% of your grade and your top three midterm scores will each count for 15% of your final grade. Dates of the midterm exams will be Friday Sep. 18th, Friday Oct. 16th, Friday Nov. 13th, and Wednesday Dec. 2nd.

- **Final Project (15%)**- There will be one group project assigned throughout the semester. Students will solve story problems in a group and submit 10-15 minutes long video. The goal of the project is to apply the technique students have learned to a variety of interesting problems and present your problem-solving process. Group may or may not be required, depending on the project assignment. Late projects will not be accepted, so please plan accordingly. Details will be announced on canvas during the semester.

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 N is your course percentage weighted according to the above, then

$93 \leq N \leq 100$	:	A	$73 \leq N < 78$	:	C
$90 \leq N < 93$	:	A-	$70 \leq N < 73$	:	C-
$88 \leq N < 90$	:	B+	$68 \leq N < 70$	:	D+
$83 \leq N < 88$	:	B	$63 \leq N < 68$	:	D
$80 \leq N < 83$	:	B-	$60 \leq N < 63$	:	D-
$78 \leq N < 80$	:	C+	$N < 60$	:	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.

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.

Important Dates: Class will meet every Monday, Wednesday, Friday, however, there will be no class: Monday, September 7th (Labor Day), Friday, November 27th (Thanksgiving holiday).

- Last day to add, drop (delete), elect CR/NC, or audit classes: Friday, September 4th

- Last day to withdraw from classes: Friday, October 16th

COVID-19: Students must self-report if they test positive for COVID-19 via coronavirus.utah.edu.

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/

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 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 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 or 801-581-7776.

Additional Policies: Due to experience, I have decided to make some additional policies regarding my classroom administration and grading.

- There will be no retakes of exams, for any reason.

- If you have an emergent, extenuating circumstance that makes it necessary to take an alternate exam, it is your responsibility to discuss that with me, before the exam occurs, or as soon as possible. In general, I allow exams to be taken early, but not late.

- No cursing nor negative ranting (for example, "math sucks") on any written work turned in, as it's unprofessional behavior. The penalty for such things on your written work will be a zero score on that assignment or test.

- I will regularly post announcements to the class in Canvas and will hold you accountable for receiving that information. Be sure to turn on your notifications in Canvas so you are alerted to announcements I make in Canvas as well as grade changes, discussion posts, etc.

- If you have questions about any exam/assignment grade, or you want to appeal the grading of the exam/assignment, you must turn it in to me (either on Canvas or in Gradescope depending on how the assignment/exam was graded) within one week of the exam/assignment being turned back in class. I'm happy to look over your appeal and/or questions and give my feedback in order to benefit your learning. But, it must be done in this time frame of a week from when I hand back the exam/assignment.

- If you cheat on any homework, project, quiz or exam, I will automatically give you a zero for that grade. Depending on the severity of the cheating, I may decide to fail you from the class. Please note that the use (or even just pulling it out of your pocket) of a cell phone or any other electronic device during any in-class exam is considered cheating and cause for receiving an automatic zero. Also, if you exhibit any other behaviors that are unethical, like offering me a bribe to give you a better grade (even if you later claim you were joking), I will report your behavior to the Dean of Students.

I reserve the right to change my policies stated in this syllabus at some point in the semester. If I do make a change to a policy, I will announce it in class and post an Announcement on Canvas about it.