

Math 1210-018 : Calculus I, Fall 2018

Time and Location	MTWF 12:55PM-1:45PM, LCB (LeRoy E. Cowles Building) 219
Instructor	Chee Han Tan (My first name is actually Chee Han)
Contact	Office: JWB 129 Email: tan@math.utah.edu (Please include “Math 1210” in the subject line) Office Hours: MW 12:25PM-12:55PM & 1:45PM-2:15PM or always available by appointment
Lab Information	Learning Assistant: Hayden Strikwerda Email: strikhayden@gmail.com Section 19: Thursday 12:55PM-01:45PM in AEB (Alfred C. Emery Building) 360 Section 20: Thursday 2:00PM-2:50PM in AEB 360
Textbook	ISBN-10: 0132306336, ISBN-13: 9780132306331. <i>Calculus with Differential Equations</i> , by Varberg, Purcell, and Rigdon (9th edition). For information on purchasing the textbook, go to http://www.math.utah.edu/schedule/bookInfo/CalcBookInfo-3.pdf .
Course Website	Canvas will be used heavily for posting announcements, homework assignments, grades, files and any relevant supplementary material. I will hold you accountable for receiving these information. If you do not check Canvas regularly, you should have announcements forwarded to an email address that you do check regularly. Either sign in through CIS or go to https://utah.instructure.com/courses/511502 .
Prerequisites	“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+. <i>Important note:</i> The mathematics department DOES enforce prerequisites for all undergraduate courses. If you were able to register for this class based on your enrollment in the prerequisite course last semester and you did not receive the minimum grade in that course to enter this class, then you will be dropped from this class on Friday of the first week of classes. If you are in this situation, it is in your best interest to drop yourself from this class and enroll in a class for which you have the prerequisites before you are forcibly dropped.
Course Information	Math 1210 Calculus I is a 4-credit course. This will be a homework intensive class. According to the University of Utah, a 4-credit course should have about 4 hours of lecture and 8 hours of outside study/homework time. This means that in our class, it will take the average student about 7 hours per week for homework and studying plus 1 hour in the lab each week. Some students will be able to get by on less, and some students will need more depending on their math background and desired grade. Please note that if you miss a lecture this time will go up considerably.
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.
Reading	You are strongly encouraged to have read the chapters before the corresponding class. You do not have to understand everything that you read the first time! Even if you spend as little as 10 minutes on this, it makes the discussion in class much clearer, and overall you will save time.
Attendance	Like any college course, attendance is not mandatory. However, concepts will be thoroughly explained and reviewed in class, thus it is to your absolute benefit to attend all classes. Students who regularly attend score on average 30% higher on exams than those who do not.

Expected Learning

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

Outcomes

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.

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.

Cheating

If a student is caught cheating on any homework, quizzes or exams, they will automatically receive a "0" for that assignment. Depending on the severity of the cheating, they may fail the class. Please note that the use (or even just pulling it out of your pocket) of a cellphone or any other electronic device is considered cheating and cause for receiving an automatic zero on any exams. If you exhibit any other behaviors that are unethical, I will not hesitate to report your behavior to the Dean of Students.

Letter Grades

Semester letter grades will be converted from the numerical semester scores N as follows:

$93 \leq N \leq 100$: 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

Grading

Grades for each student will be calculated using the following formula:

$$\text{Homework (15\%)} + \text{Quiz (5\%)} + \text{Lab (10\%)} + \text{Midterms (3}\times\text{15=45\%)} + \text{Final (25\%)}$$

There will be no make-up homework assignments, quizzes, lab worksheets and exams. Students who miss an exam will receive a “0” on the missed exam.

1. **Homework:** Roughly three 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 covered up to and including the preceding Monday (with possibly a little spill-over to Wednesday). See the “Assignments” tab in Canvas for the list of assigned problems. Three of the problems will be selected for grading by the grader, each graded out of 5 points; completion and submission counts for 5 points. Two lowest homework scores will be dropped. Homework will only be accepted in class, no electronic copies. **No late homework will be accepted, unless accompanied by a doctor’s note or other verification of extenuating circumstance.**
2. **Quizzes:** There will be roughly 10 weekly quizzes (Fridays when there is no midterm). You must be in attendance to take the quiz. They will be approximately 10-15 minutes and given near the end of class. Two lowest quiz scores will be dropped.
3. **Lab:** 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. **Attendance to the lab section is required**, and will count for half of the lab grade (5% of the total course grade); the remaining grade (5% of the total course grade) will be based on both completeness and correctness of the lab worksheets. To receive attendance points you must arrive in lab within 5 minutes of the start time and must stay until the end of class. The lowest lab score will be dropped.
4. **Midterm Exams:** There will be 3 in-class midterm exams on select Fridays. The content will be determined based on the pace of the course. A review sheet and/or practice exam will be posted a week prior to the midterm that will cover the same material. Please note the time:

MIDTERMS: Sept 14, Oct 19 & Nov 16, all on Fridays

5. **Final Exam:** All students are expected to take the two-hour comprehensive final exam. The room will be announced during the last week of classes. As with the midterms, a review sheet and/or practice exam will be posted a week prior. All students are expected to arrange their personal schedule to allow them to take the exam. Students with conflicts should speak to the instructor as soon as possible but unless it is an absolute emergency no student will be allowed to take the final exam early. Please note the time:

FINAL: Wednesday, December 12, 2018, 1:00-3:00PM

Important Dates

Last day to add without a permission code: Friday, August 24

Last day to add, drop, audit, elect CR/NC: Friday, August 31

Last day to withdraw from classes: Friday, October 19

Last day to reverse CR/NC option: Friday, November 30

Midterm 1: Friday, September 14

Midterm 2: Friday, October 19

Midterm 3: Friday, November 16

Final exam: Wednesday, December 12

Additional Resources

Your Classmates: You can learn a great deal from discussing mathematics with your classmates, and you are encouraged to work on your homework together (solutions, however, must be written up independently). That said, it is important that these mathematical discussions not be one-sided: the only real way to learn mathematics is to struggle through it, and not simply to accept the fruit of someone else's understanding. Be honest with yourself about this when working with classmates.

Mathematics Tutoring Center: The math department offers free drop-in tutoring for students, at the T. Benny Rushing Mathematics Student Center. The center is located underneath the walkway between LCB (LeRoy Cowles Building) and JWB (John Widtsoe Building), and can be accessed by entering either building.

Opening hours: Monday - Thursday 8AM-8PM and Friday 8AM-6PM.

Website: <http://www.math.utah.edu/ugrad/mathcenter.html>

Mathematics Department Video Lectures: Video lectures are available at <http://www.math.utah.edu/lectures/math1210.html>. By combining the textbook, the lectures, and the videos, you will have an abundance of perspectives to complete your understanding of our course material. Also, if you are shaky on some of the prerequisites, I encourage you to review the departmental videos from the College Algebra and Trigonometry courses.

Private Tutoring: University Tutoring Services, 330 SSB. There is also a list of tutors at the math department office JWB 233.

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. You 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, collusion, fraud, theft, etc. Students should read the Code carefully and know you are responsible for the content. According to Faculty Rules and Regulations, it is the faculty responsibility to enforce responsible classroom behaviors, beginning with verbal warnings and progressing to dismissal from class and a failing grade. Students have the right to appeal such action to the Student Behavior Committee. See <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 (CDA), located at 162 Olpin Union Building. To do so, contact CDA at 801-581-5020 (V/TDD) to set up an appointment. CDA will work with you and the instructor to make arrangements for accommodations. All information in this course can be made available in alternative format with prior notification to CDA.

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 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 <https://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.

1. I will demand respectful behavior in my classroom. Examples of disrespect include, but are not limited to, reading a newspaper or magazine in class, social chatting with your friend in class, text-messaging your buddies during class, or cuddling with your girl/boyfriend in class. If you choose to be disrespectful with distracting behavior during our class, please keep in mind that you put me in a position of choosing between protecting/taking a stand for you OR for the other students or myself whom you are disrupting. I can guarantee I will choose to stand for the students who are there to learn without disruptions and I will thus take action to terminate your distracting behavior, and that action may not be desirable for you.
2. Cellphones and laptops are prohibited in the classroom. If you need to use your phone during class, please leave the classroom. It is almost impossible to take notes for a math class on a laptop in real time. However, if you are using a tablet or iPad or some similar device to take notes and the screen lies parallel to your desk, that is fine.
3. There will be no retakes of exams, for any reason.
4. There will be no cursing nor negative ranting (for example, "math sucks") on any written work turned in. The penalty for such things on your written work will be a zero score on that assignment or test.
5. If there are any emergencies that prevents you from attending the exam or turning in homework and lab worksheet, it is 100% your responsibility to notify me before any of these events. I will try my best to accomodate and help you in some manner, which I am truly happy to do; but the longer you wait to communicate me, the less I can and am willing to do to help. The best way to contact me is by email or in office hours. Please keep in mind that I do not check my email regularly during the weekend.
6. If you have questions about any exam/quiz/homework grade, or you want to appeal the grading, you must bring it to me within one week of the return of the exam/quiz/homework. I am happy to look over your appeal and/or questions and give my feedback to benefit your learning.
7. Please make sure you do your best throughout the semester, knowing the grading scheme and what's expected of you, and come talk to me if you need further study strategies. I will be happy to brainstorm ideas to help you maximize your study strategies and improve your mathematical understanding. I will NOT offer any additional extra credit at the end of the semester or any other way for you to improve your grade at that time. No exceptions. Please respect this and do not ask for special favors or extra credit when you realize you do not like your grade. Most likely, I just will not respond to such emails or questions in person.

8. **Don't be afraid to ask questions!** Most of the time, there might be at least 8 other students who have the same questions as you. You are encouraged to speak to me immediately after the class about any questions concerning the course materials, although I very much prefer you to do that during the class, as this will benefit the entire classroom.

Disclaimer

This syllabus is not a binding legal contract. I reserve the right to make changes as I see fit at any time, but all adjustments will be announced.

Tentative Course Schedule, Fall 2018

Week	Section	Topic
Week 1 (August 20 - 24)	1.1	Introduction to Limits
	1.2	Rigorous Study of Limits
	1.3	Limit Theorems
		Lab: Algebra Review
Week 2 (August 27 - 31)	0.7	Trigonometric Functions
	1.4	Limits Involving Trigonometric Functions
	1.5	Limits at Infinity; Infinite Limits
		Lab: Basics of Limits
Week 3 (September 3 - 7)		NO CLASS Monday September 3
	1.6	Continuity of Functions
	2.1	Two Problems with One Theme
	2.2	The Derivative
		Lab: Limits and Infinities
Week 4 (September 10 - 14)	2.3	Rules for Finding Derivatives
		REVIEW in class
		Lab: Midterm 1 Review
		****Midterm 1 (Friday, September 14)****
Week 5 (September 17 - 21)	2.4	Derivatives of Trigonometric Functions
	2.5	The Chain Rule
	2.6	Higher-Order Derivatives
		Lab: Derivative as a Limit
Week 6 (September 24 - 28)	2.7	Implicit Differentiation
	2.8	Related Rates
	2.9	Differentials and Approximations
		Lab: Derivative Rules
Week 7 (October 1 - 5)	3.1	Maxima and Minima
	3.6	The Mean Value Theorem for Derivatives
	3.2	Monotonicity and Concavity
		Lab: Linearization and Differentials
(October 8 - 12)		FALL BREAK
Week 8 (October 15 - 19)	3.3	Local Extrema and Extrema on Open Intervals
		REVIEW in class
		Lab: Midterm 2 Review
		****Midterm 2 (Friday, October 19)****

Week	Section	Topic
Week 9 (October 22 - 26)	3.5	Graphing Functions Using Calculus
	3.4	Practical Problems
	3.7	Solving Equations Numerically
		Lab: Optimization
Week 10 (October 29 - November 2)	3.8	Antiderivatives
	3.9	Introduction to Differential Equations
	4.1	Introduction to Area
		Lab: Graphing Functions and Mean Value Theorem
Week 11 (November 5 - 9)	4.2	The Definite Integral
	4.3	The First Fundamental Theorem of Calculus
	4.4	The Second Fundamental Theorem of Calculus and the Method of Substitution
		Lab: Antiderivatives and Applications
Week 12 (November 12 - 16)	4.5	The Mean Value Theorem for Integrals and the Use of Symmetry
	4.6	Numerical Integration
		REVIEW in class
		Lab: Midterm 3 Review
		****Midterm 3 (Friday, November 16)****
Week 13 (November 19 - 23)	5.1	The Area of a Plane Region
	5.2	Volumes of Solids: Slabs, Disks, Washers
		NO CLASS Friday November 23
		Lab: None
Week 14 (November 26 - 30)	5.3	Volumes of Solids of Revolutions: Shells
	5.4	Length of a Plane Curve
		Lab: Applications of Integration
Week 15 (December 3 - 6)	5.5	Work and Fluid Force
		REVIEW in class
		Lab: Final Exam Review
Week 17		****Final Exam (Wednesday, December 12, 1:00-3:00PM)****