Math 31A (Section 1), Fall 2019:
Differential and Integral Calculus

Mon, Wed, Fri 8-8:50am
Math. Sciences Building 4000A

Prerequisites

You are expected to be familiar with polynomial functions, trigonometric functions, exponential and logarithm functions; more precisely, computing with these functions and knowing their graphs. You are expectied to be familiar with materials in Math 31A, including definition and computation of limits, definition and techniques of differentiation: product rule, quotient rule and chain rule, and definition and change of variable technique for integration.

Learning Goals

- You will learn the concept of limits, differentiation, and integration, be able to compute concrete examples with them, and make application.
- You will improve problem solving skills and habits of thinking about mathematics, including being able to break a problem down into smaller ones, to make connections among different topics, to check your own work for consistency, and to tackle unfamiliar problems confidently.
- You will develop skills to communicate mathematics with your classmates constructively, through speech, writing, and graphics.
- You will acquire a foundation in calculus that will serve you well in your future study of mathematics, sciences, engineering, or the social sciences.

Instructor

Chi-Yun Hsu
Office: MS 5242
Email: cyhsu@math.ucla.edu (Please add [Math31A] in the subject when emailing me.)

Office Hours:

Tues.	4:30-5:30pm	at MS 5242
Thurs.	4:30-5:30pm	at MS 5242
or by appointment		

Teaching Assistants

Benjamin Thompson (MS 2954, ezrabenthompson@math.ucla.edu)
Section 1A: Tuesday 8-8:50am, MS 5137
Section 1B: Thursday 8-8:50am, MS 5137

Jason Brown (MS 2350, jasbrown@math.ucla.edu)
Section 1C: Tuesday 8-8:50am, BUNCHE 3153
Section 1D: Thursday 8-8:50am, ROLFE 3108

Course website

https://ccle.ucla.edu/course/view/19F-MATH31A-1

Textbook

Rogawski, Single Variable Calculus, 4th Edition
(If you choose to use an older edition, make sure you are doing the correct homework problems.)

Grade

Your course score will be computed as the maximum of the following two schemes:

Homework	15%
Midterm 1	25%
Midterm 2	25%
Final Exam	35%

Homework	15%
Max of Midterms	35%
Final Exam	50%

I will assign letter grades based on your course score. The basic cutoff is A$- \geq 90\%$, B$- \geq 80\%$, C$- \geq 70\%$, D$- \geq 60\%$, F$< 60\%$. I might make these cutoffs lower, but I will not raise them. You can check your scores on homework and exams on MyUCLA (not CCLE) gradebook.

Homework

I will assign homework on the course website the night before each class. The homework from the previous Fri, Mon, Wed is **due at the beginning of the Friday class**. It is better to do the homework problems after each lecture, rather than rushing to finish on Thursday night.

If you miss a class, you are still responsible for handing in the homework on time, either by turning it in to me earlier, or asking a classmate to hand it in for you in the Friday lecture. Sending an email to me with a clear photo or scan of your assignment is possible but not recommended, as there have been instances when the email did not arrive. If you choose this method, you have to take the responsibility to make sure I receive it. **Late homework will NOT be accepted.**

Each homework submission is worth 15 points. The score will be based on both correctness and completeness. There will be 4 randomly chosen problems, each worth 3 points, graded for correctness. And the overall completion is worth 3 points, with 1 point taken for each missed problem. **The lowest homework score will be dropped.**

I encourage you to discuss homework problems with other students. However, you must write up the solutions on your own, as writing helps you deepen your understanding. Apart from help from me or TAs, you must acknowledge any collaborators or references at the top of your assignement.

Exams

Please bring a photo ID to every exam. During the exams, you may not use notes, calculators, cell phones, or anything not for writing. There will be NO make-ups for missed midterms. You must take the final exam in order to pass the class. Make-ups for the final exam are permitted only under exceptional circumstances. Tentative exam dates are:

Midterm 1	Oct. 23 (Wed.)	8-8:50am	MS 4000A	On Lecture 1-9
Midterm 2	Nov. 13 (Wed.)	8-8:50am	MS 4000A	On Lecture 10-18 (and 1-9)
Final Exam	Dec. 10 (Tues.)	8-11am	TBD	On Lecture 19-29 (and 1-18)

Learning Resources

- Your fellow students: You are encouraged to form study groups with your classmates.
- Office hours: You do not need to make an appointment; just show up to ask any questions.
- Student Math Center (SMC): located at MS 3974 and offers group study and tutorials for lower division mathematics courses, led by TAs. See http://www.math.ucla.edu/ugrad/smc for details on the opening hours.
- Tutors: The Math Department maintains a list of UCLA mathematics graduate students who are available for hire as tutors. See http://www.math.ucla.edu/people/tutors.

You are encouraged to make good use of these resources. At the same time, don't be too quick to run for help. Learning is challenging and takes time. You should not expect to solve every problem immediately. Try a couple of different approaches before asking for help. Often you learn the most from things you try that don't work!

Disabilities Requiring Accommodation
If you are already registered with the Center for Accessible Education (CAE), please request your Letter of Accommodation on the Student Portal. If you are seeking registration with the CAE, please submit your request for accommodations via the CAE website. Please note that the CAE does not send accommodations letters to instructors – you must request that I view the letter in the online Faculty Portal. Once you have requested your accommodations via the Student Portal, please notify me immediately so I can view your letter.

Students with disabilities requiring academic accommodations should submit their request for accommodations as soon as possible, as it may take up to two weeks to review the request. For more information, please visit the CAE.

> Center for Accessible Education (CAE)
> A255 Murphy Hall
> www.cae.ucla.edu
> (310) 825-1501

Statement on Sexual Misconduct
Title IX prohibits gender discrimination, including sexual harassment, domestic and dating violence, sexual assault, and stalking. If you have experienced sexual harassment or sexual violence, you can receive confidential support and advocacy at

> CARE Advocacy Office for Sexual and Gender-Based Violence
> 1st Floor Wooden Center West
> CAREadvocate@careprogram.ucla.edu
> (310) 206-2465

In addition, Counseling and Psychological Services (CAPS) provides confidential counseling to all students and can be reached 24/7 at (310) 825-0768. You can also report sexual violence or sexual harassment directly to

> University's Title IX Coordinator
> 2241 Murphy Hall
> titleix@conet.ucla.edu
> (310) 206-3417

Reports to law enforcement can be made to UCPD at (310) 825-1491.

Faculty and TAs are required under the UC Policy on Sexual Violence and Sexual Harassment to inform the Title IX Coordinator should they become aware that you or any other student has experienced sexual violence or sexual harassment.

Calendar

	Monday	Wednesday	Friday
Week 0 (9/23-9/27)			1. Introduction
Week 1 (9/30-10/4)	2. Limit Laws, Limits and Continuity	3. Evaluating Limits Algebraically	4. Trig. Limits, Limits at Infinity **HW 1,2,3 due**
Week 2 (10/7-10/11)	5. Intermediate Value Theorem	6. Definition of the Derivative	7. The Derivative as a Function **HW 4,5,6 due**
Week 3 (10/14-10/18)	8. Product and Quotient Rules	9. Higher Derivatives, Trig Functions	10. The Chain Rule **HW 7,8,9 due**
Week 4 (10/21-10/25)	11. Implicit Differentiation	12. **Midterm 1**	13. Related Rates **HW 10,11 due**
Week 5 (10/28-11/1)	14. Linear Approximation, Extreme Values	15. Extreme Values continued	16. Mean Value Theorem **HW 13,14,15 due**
Week 6 (11/4-11/8)	17. The Shape of a Graph	18. Graph Sketching	19. Applied Optimization **HW 16,17,18 due**
Week 7 (11/11-11/15)	No class (Veteran's Day)	20. **Midterm 2**	21. Newton's Method, Area **HW 19 due**
Week 8 (11/18-11/22)	22. The Definite Integral	23. The Indefinite Integral	24. Fundamental Theorem I **HW 21,22,23 due**
Week 9 (11/25-11/29)	25. Fundamental Theorem II	26. The Substitution Method **HW 24, 25 due**	No class (Thanksgiving)
Week 10 (12/2-12/6)	27. Areas Between Curves, Average Value	28. Volumes of Revolution	29. Method of Cylindrical Shells **HW 26,27,28 due**