

MATH 118: Fundamental Principles of Calculus (Spring 2024, 4 units)

Lectures

Section 39417R: MWF 10-10:50 am in KAP 156

Instructor: Pranava C Jayanti

Contact Info: pjayanti@usc.edu (Include "Math 118" in the subject line.)

Office Hours: MW 11 am - 12:45 pm in KAP 416F (and also via Zoom)

<https://usc.zoom.us/j/92587312373?pwd=dmMxUE13eGRnYnFNcnJXMVVENUlJdz09>

Meeting ID: 925 8731 2373

Passcode: 360725

Discussion sessions

Section 39418R: TuTh 12-12:50 pm in DMC 206

Teaching Assistant: Shengmiao Huang

Office Hours: W 1-3 pm

Contact Info: shengmia@usc.edu

Section 39419R: TuTh 1-1:50 pm in THH 217

Teaching Assistant: Ruoyu Zeng

Office Hours: F 11 am-1 pm

Contact Info: ruoyuzen@usc.edu

Math Center

Your TA will hold office hours in the [Math Center](#) (located at KAP 263), from the second week of classes. You may visit the Math Center at any operational hour (Mon-Thu 8am-7pm, Fri 8am-5pm) and there will likely be someone there to help you.

Course Content

As the title suggests, this course will cover the fundamentals of calculus. We will discuss most of chapters 1, 2, 3, 4, 5, 6 and 8 from the textbook (see below). This will include derivatives, extrema, definite integrals, the fundamental theorem of calculus, and functions of several variables.

Prerequisites

MATH 108 or MATH 117 or placement exam in MATH.

Learning Objectives

This course is, by nature, very applied (as opposed to abstract). We will not be dealing with rigorous proofs. By the end of the semester, you will be able to determine the derivatives of functions, determine the points of maximum/minimum values of a function, calculate areas under curves (definite integrals), and apply these principles to solve various problems arising in physics, economics, finance etc.

Textbook

The main source for the lectures is *Applied Calculus* by Hughes-Hallett, Gleason, Lock, Flath et al, 7th Edition. If any other reference material is used, it will be provided during the course.

You will need to purchase an access code for WileyPLUS to complete the online homework. This will also provide you with access to an electronic version of the textbook, along with some additional learning resources. You may buy a physical copy of the textbook if desired, but it is not necessary.

Course Notes

Notes used in the classroom will be uploaded to Blackboard, at the beginning of each chapter. I also recommend going through the many solved examples that the course textbook contains.

Communication

Announcements will be made in class and via Blackboard, so please check the latter regularly for notifications (or ensure that email notifications are switched on). The best way for you to

contact me is via email or during the designated office hours.

Technological Proficiency and Hardware/Software Required

No softwares will be used in this course, except Blackboard and Gradescope. Zoom may be used in case I am traveling at any point of the semester.

Students are expected to make use of only *scientific* calculators. Programmable/graphing calculators are not permitted during quizzes and exams. Below are some links that may be helpful.

USC Technology Support Links

[Zoom information for students](#)

[Blackboard help for students](#)

[Software available to USC Campus](#)

Additional online resources

- [Desmos](#): This is an online graphing calculator that you may find useful to visualize and manipulate functions.
- [Wolfram Alpha](#): This is an online computational engine that can perform various operations in calculus (and much more!).

Homework assignments

Homework will be assigned approximately once a week on Blackboard, and will consist of 15-20 problems chosen from the textbook. The assignments will be auto-graded immediately and your score will be entered on Blackboard. Late work will not be tolerated unless there is a reasonable excuse (medical/religious/emergency). Here's a tentative homework schedule (subject to change, if necessary):

Homework #	Date assigned	Date due	Sections covered
1	10th Jan	22nd Jan	1.1 - 1.5
2	17th Jan	29th Jan	1.5 - 1.9, 2.1
3	24th Jan	5th Feb	2.2 - 2.5, 3.1

4	31st Jan	21st Feb	3.2 - 3.4, 4.1
5	7th Feb	1st Mar	4.2 - 4.8
6	28th Feb	8th Mar	8.1 - 8.3
7	6th Mar	25th Mar	8.4 - 8.6
8	20th Mar	8th Apr	5.1 - 5.4
9	5th Apr	17th Apr	5.5 - 5.6, 6.1 - 6.3
10	15th Apr	26th Apr	6.4 - 6.6

Quizzes

Quizzes will be conducted on Thursdays in discussion sessions. Of 12 quizzes conducted, the lowest two scores will be dropped. Each quiz will last ~10 minutes and will test your basic understanding of the concepts discussed in the week prior (and in the corresponding homework). You are permitted to refer to your own notes while taking the quizzes. They will be graded by the TA and the scores uploaded to Blackboard, usually within a week. There will be no quiz in the weeks of the midterm exams. If you miss a quiz, please contact the TA **as soon as possible (within the same week)**.

Quiz #	Date	Topics
1	18th Jan	1.1 - 1.3
2	25th Jan	1.4 - 1.7
3	1st Feb	2.1 - 2.4
4	8th Feb	2.5, 3.1 - 3.4
5	23rd Feb	4.1 - 4.5
6	29th Feb	4.6, 8.1 - 8.2
7	7th Mar	8.3 - 8.4
8	21st Mar	8.5 - 8.6
9	4th Apr	5.1 - 5.3
10	11th Apr	5.4 - 5.6

11	18th Apr	6.1 - 6.3
12	25th Apr	6.4 - 6.6

Midterm exams

There will be two in-class midterms (50 minutes each) conducted during the semester, tentatively on **Monday, February 12th 2024** and **Friday, March 29th 2024**. Both exams will be conducted during regular class hours, and the solutions will be posted to Blackboard afterwards.

Midterm - 1	Feb 12th 2024	Chapters 1, 2, 3 (minus Sections 1.10, 3.5)
Midterm - 2	Mar 29th 2024	Chapters 4, 8

For the midterm exams, you will be allowed one sheet (front and back) of *handwritten* notes on a standard 8.5"x11" paper, and a scientific (*non-programmable/non-graphing*) calculator. If you need to miss the midterm exams due to any planned absence, please let me know at the beginning of the semester.

Final exam

The end-of-semester exam (common across all sections of the course) will be conducted on **Wednesday, May 8th 2024 from 8 am to 10 am**. Please keep this date in mind. For the final exam, you may be allowed one sheet (front and back) of *handwritten* notes on a standard 8.5"x11" paper, and a scientific (non-programmable/non-graphing) calculator.

There are no make-ups for the final exam. No student can take it earlier or later than the scheduled time. If the final exam poses a conflict with religious observances or any pre-planned activity, please contact me as early as possible. In certain situations, due to documented emergencies, students take an Incomplete (IN) grade. More information regarding policies for finals may be found [here](#).

Grading Breakdown

Mode of evaluation	Fraction of Grade
Homework	10%

Quizzes	20%
Exams	70%
Total	100%

The exam score of 70% will be calculated as the best of the following numbers:

- 20% Midterm-1 + 20% Midterm-2 + 30% Final
- 30% Midterm-1 + 40% Final
- 30% Midterm-2 + 40% Final

Missed midterm exams

For any unplanned absences, there will be no make-up exam. Your midterm will be scored as zero. (Please see the grading breakdown above for clarification.) If you miss both midterms, you will be recommended to drop the course, since the final will not be reweighted to account for both missed exams (one of your midterms will therefore be counted as an *actual zero*).

Grading Scale

Letter grades will be assigned at the end of the semester, after grading “on a curve” to account for averages that are lower than usual. These variations notwithstanding, a very rough estimate for the grades would be as follows – A for >90%, B for 80-90%, C for 70-80%, D for 60-70%, with pluses and minuses distributed appropriately.

Important dates

Task	Deadline
Last day to add course or change to Pass/No Pass	Fri, Jan 26 th 2024
Last day to drop without a mark of "W" and receive a refund	
Last day to withdraw without a “W” on transcript or change pass/no pass to letter grade	Fri, Feb 23 rd 2024
Last day to drop with a mark of “W”	Fri, Apr 5 th 2024

More details can be found [here](#).

Attendance

Lectures will be delivered in-person, and will not be streamed or recorded. As a matter of principle, I do not enforce attendance in my courses (you are all adults, and I shall treat you as such!). However, coming to lectures, paying attention, and actively participating with questions/comments is very strongly advised. This course moves at a fast pace, so it is easy to feel lost if you miss a few classes.

That being said, I will make every effort to help those with reasonable excuses. If you have to miss class due to religious observances during the semester, please let me know your schedule as early as possible in the semester, so that we can work to accommodate your absence. In case of medical reasons, please contact me via email as soon as it is possible for you to do so.

Course evaluation

Course evaluations at the end of the semester are a great way for me to receive feedback from you – this will help me improve my teaching, making it a better experience for both me and the next batch of students. Of course, you don't have to wait until the end of the semester for this. If you wish to contact me with any suggestions/requests during the semester, please do not hesitate to do so.

Course Schedule: A Weekly Breakdown

A tentative course schedule is as follows. It is subject to change throughout the semester, so please check it regularly and look out for alerts on Blackboard.

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	1/8: Intro; 1.1	1/9: No discussion	1/10: 1.2, 1.3	1/11: Discussion	1/12: 1.3, 1.4
Week 2	1/15: MLK Day	1/16: Discussion	1/17: 1.4	1/18: Quiz-1	1/19: 1.5, 1.6, 1.7
Week 3	1/22: 1.5, 1.6, 1.7; HW-1	1/23: Discussion	1/24: 1.7, 1.8	1/25: Quiz-2	1/26: 1.9, 2.1, 2.2
Week 4	1/29: 2.3, 2.4; HW-2	1/30: Discussion	1/31: 2.5, 3.1	2/1: Quiz-3	2/2: 3.2, 3.3

Week 5	2/5: 3.4, 4.1; HW-3	2/6: Discussion	2/7: 4.2, 4.3	2/8: Quiz-4	2/9: Review
Week 6	2/12: Midterm-1	2/13: Discussion	2/14: 4.3	2/15: Discussion	2/16: 4.4
Week 7	2/19: President's Day	2/20: Discussion	2/21: 4.5, 4.6; HW-4	2/22: 4.6, 4.7	2/23: Quiz-5
Week 8	2/26: 4.7, 4.8 (VIRTUAL)	2/27: Discussion	2/28: 8.1, 8.2 (VIRTUAL)	2/29: Quiz-6	3/1: 8.2, 8.3; HW-5
Week 9	3/4: 8.3, 8.4	3/5: Discussion	3/6: 8.4	3/7: Quiz-7	3/8: 8.5; HW-6
Week 10	SPRING BREAK				
Week 11	3/18: 8.6	3/19: Discussion	3/20: 8.6, 5.1	3/21: Quiz-8	3/22: 5.1, 5.2
Week 12	3/25: Review	3/26: Discussion	3/27: 5.2, 5.3	3/28: Discussion	3/29: Midterm-2
	3/25: HW-7				
Week 13	4/1: 5.3, 5.4	4/2: Discussion	4/3: 5.4	4/4: Quiz-9	4/5: 5.5, 5.6
Week 14	4/8: 6.1; HW-8	4/9: Discussion	4/10: 6.2	4/11: Quiz-10	4/12: 6.3
Week 15	4/15: 6.4	4/16: Discussion	4/17: 6.5; HW-9	4/18: Quiz-11	4/19: 6.5, 6.6
Week 16	4/22: 6.6	4/23: Discussion	4/24: Review	4/25: Quiz-12	4/26: Review

					4/26: HW-10
Finals Week					
Finals Week			5/8: Final Exam (8-10 am)		

Statement on Academic Conduct and Support Systems

Academic Conduct

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on [Research and Scholarship Misconduct](#).

Students and Disability Accommodations

USC welcomes students with disabilities into all of the University’s educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems

- *Counseling and Mental Health - (213) 740-9355 – 24/7 on call*

studenthealth.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

- *National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call*

suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

- *Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press "0" after hours – 24/7 on call*

studenthealth.usc.edu/sexual-assault

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

- *Office for Equity, Equal Opportunity, and Title IX (EEO-TIX) - (213) 740-5086*

eeotix.usc.edu

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

- *Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298*

usc-advocate.symplicity.com/care_report

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

- *The Office of Student Accessibility Services (OSAS) - (213) 740-0776*

osas.usc.edu

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

- *USC Campus Support and Intervention - (213) 821-4710*

campussupport.usc.edu

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

- *Diversity, Equity and Inclusion - (213) 740-2101*

diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

- *USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call*

dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

- *USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call*

dps.usc.edu

Non-emergency assistance or information.

- *Office of the Ombuds - (213) 821-9556 (UPC) / (323-442-0382 (HSC)*

ombuds.usc.edu

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

- *Occupational Therapy Faculty Practice - (323) 442-3340 or otfp@med.usc.edu*

chan.usc.edu/otfp