



Math 425a Syllabus
Fundamental Concepts of Analysis (part I)
Lecture 39645R (Leslie)

COURSE INFORMATION AT-A-GLANCE

Math 425a: Fundamental Concepts of Analysis (part 1) (4.0 Units), Fall 2022

Official Course Description

The real number system, metric spaces, limits, continuity, derivatives and integrals, infinite series.

Prerequisite(s): 1 from (MATH 290 or MATH 430 or MATH 432)

Required Textbook: NONE. The instructor will provide notes (posted on Blackboard) that will serve as a textbook. It is not required to purchase any textbook (even the additional ‘recommended supplemental resources’ below).

Additional Recommended Resources (Not Required):

- Rudin, *Principles of Mathematical Analysis*, 3rd ed. This has been the ‘standard’ textbook for Analysis I courses for decades. Even though we are not using it for this class, it is worth being familiar with if you plan to take more math courses. However, it is notoriously difficult to read, and may serve better as a reference after you finish the course than as a resource while you are taking it.
- Abbott, *Understanding Analysis*, 2nd ed. If the semester were twice as long, I would teach the first half using this textbook as an introduction. It treats most of the course topics in a way that is more concrete than what you will see in class. (Unfortunately, though, lecture time is limited, and the more abstract treatment is considered essential for future courses.)
- Pugh, *Real Mathematical Analysis*, 2nd ed. This book strikes a good balance between Rudin’s and Abbott’s. It’s pedagogically oriented like Abbott’s book but still provides a robust treatment of all the course topics. It also treats a number of less standard topics.
- Munkres, *Topology*, 2nd ed. As the title suggests, this is a topology book, not an analysis book. However, one actually needs quite a bit of point-set topology to do analysis, and I can’t recommend Munkres’ book highly enough if you want to dig deeper into this subject. It’s very possibly the best-written textbook I have ever read, and the exercises are extremely well thought-out and worthwhile.

Meeting Times, Locations, Instructor

Lecture

9:00am–9:50am MWF (Section 39645R), Taper Hall (THH) room 210.

Instructor: Trevor Leslie, lesliet@usc.edu. Assistant Professor (RTPC) of Mathematics.

Office Hours: 2pm–3pm on Wednesdays and Thursdays, and by appointment.

Discussion Section

4:00-5:50pm Thursdays (Section 39646R), Kaprielian Hall (KAP) room 148.

Instructor: TBA

Office Hours: TBA.

Please be aware that quizzes and exams will be regularly scheduled during discussion.

Exams and Other Important Dates

- Monday, September 5: Labor Day—no class
- Thursday, September 29: **Midterm Exam #1** (during discussion)
- October 13–14 (Thursday–Friday): Fall Break—no class
- Thursday, November 3: **Midterm Exam #2** (during discussion)
- Friday, November 11: Veterans Day—no class
- Friday, November 11: Last day to withdraw with a grade of ‘W’
- Friday, December 2: Last day of class
- Monday, December 12, **Final Exam** (11am–1pm).

The dates and modality of exams is subject to change, according to pandemic-related disruptions and other unforeseen extreme circumstances; barring such circumstances, however, these dates and times should be considered finalized.

I am aware of the following dates associated to religious observances that fall on days of class meetings. I will make efforts to avoid scheduling homework deadlines and quizzes on these dates. If you feel a date is missing from this list, please bring it to my attention as soon as possible.

- Rosh Hashana: September 26th and 27th
- Yom Kippur: October 5th
- Sukkot: October 10th and 11th
- Shemini Atzeret / Simchat Torah: October 17th and 18th

COURSE FORMAT AND INSTRUCTIONAL MODE

This course will run in-person. The instructional mode is subject to change according to university directives and instructor health.

Reasonable efforts will be made to live-stream lectures via Zoom, with recordings available on Blackboard; however, the following disclaimers are in place:

- Technical difficulties may occasionally prevent the live-stream or recording from being available.
- The instructor may or may not be able to hear questions asked by remote participants.
- The quality of available live-streams and recordings of class meetings is not guaranteed to be high.
- The instructor will not use class time to attempt to resolve technical difficulties (for example, if the recording stops working mid-lecture), or if the camera goes out-of-focus.

With the above in mind, students should plan to attend class in person if their health allows it. See below for more details.

Attendance

In-person attendance is strongly recommended, *provided* that you are not sick, that you have no symptoms of any illness, and that you do not have a medical reason to be absent. Attendance on any given day is *not required*, unless of course there is a scheduled quiz or exam. However, if your attendance over the course of the semester is so sparse that I don’t know who you are by the end of the semester, I reserve the right to impose a small grade penalty (A to A–, B– to C+, etc.).

Online Course Tools

- Blackboard. Lecture notes and Zoom meeting links will be available through Blackboard. Blackboard access is available through my.usc.edu.
- Gradescope. You will submit homework assignments through Gradescope. You should have already received an email notification when I added you to the Gradescope roster for this course.
- Campuswire. We will use Campuswire as a discussion board for questions on homework, as well as course logistics. You will be sent an email invitation to join the Campuswire roster.

ASSIGNMENTS AND ASSESSMENTS

Written Homework (25% of total grade): Roughly one assignment per week will be assigned and submitted via Gradescope. Your lowest written homework grade will be dropped automatically. A list of assigned problems and a very detailed list of homework policies and procedures can be found in the document titled ‘Homework’, posted to Blackboard under the ‘Content’ tab.

Quizzes (10% of total grade): These will be administered weekly during (most) discussion sections. Your lowest score will be dropped automatically.

Exams (65% of total grade): Two midterm exams (20% each) will be administered in class. The final exam (25%) will be administered per the university’s final exam schedule. See page 1 of this syllabus for the dates.

There will be a small amount of extra credit available on each exam, in the following manner: The total points available will exceed 100, but the exam will be scored out of 100. For instance, if the problem sub-scores total to 105, and you earn an 85/105, your exam score will be recorded as 85% rather than $85/105 \approx 81\%$.

The final examination will be comprehensive, covering all topics presented in the course. Some extra emphasis will be placed on the material covered after the second midterm. Make-up exams will be allowed only under exceptional circumstances and will be dealt with on a case-by-case basis.

Grade Cutoffs

The end-of-semester grade cutoffs will tentatively be determined using the following table. I reserve the right to change these cutoffs in your favor. You may be interested to know that the anticipated median grade in the course is a B or possibly a B+.

A	≥ 92.00	B+	84.00–87.99	C+	63.00–67.99	D+	40.00–49.99	F	<20.00
A–	88.00–91.99	B	74.00–83.99	C	54.00–62.99	D	30.00–39.99		
		B–	68.00–73.99	C–	50.00–53.99	D–	20.00–29.99		

If the (unadjusted) class GPA is lower than a B, the grading scheme will be adjusted accordingly.

Grading Disputes

If you feel an assignment or assessment has been mis-graded, bring it to the attention of your TA and myself within two days of when it is returned to you. The appropriate person will re-grade the entire assignment or assessment—not just the problem in question. Therefore the overall score may go up or down. Grading grievances aired more than two days after they are returned may not be re-graded.

MISSED QUIZ POLICY

The following policies will be applied for missed quizzes.

- A student may miss one quiz without any penalty whatsoever. This is intended to be reserved for health-related reasons, but since such a policy would be impossible to enforce, no reason is required. The student is, however, required to report the missed quiz to the instructor, to facilitate easier record-keeping.
- *Of all the quizzes a student takes*, one score will be dropped. A student who does not miss any quizzes still may only drop *one* quiz. That is to say, the *missed quiz* is totally separate from the *dropped quiz*.

Summary (assuming 8 quizzes total):

- 0 missed quizzes \implies 1 additional dropped quiz, 7 quizzes counted (out of 8 total).
- 1 missed quizzes \implies 1 additional dropped quiz, 6 quizzes counted (out of 8 total).

- If a student misses more than 1 quiz, they will be required to take a make-up quiz (or receive a zero). **The make-up quiz will be somewhat more difficult than the original version.** The rationale for this is that it will discourage students from missing quizzes unnecessarily. On the other hand, it is intended to still be fair for students who need to miss more than 1 quiz for legitimate reasons. Students who take the make-up version will have the benefit of being able to study from the original (easier) version of the quiz (and this will not be considered cheating).
- A student may take a make-up quiz up to **two weeks** after the original quiz (but before the final exam). No make-up quizzes will be given after this window except in truly exceptional circumstances.
- A student may attend discussion section and still ‘opt-out’ of taking a quiz. The rationale here is that without this option, a student who is happy with their overall quiz grade with two weeks left in the semester may feel an incentive to skip discussion sections in order to avoid incurring undesirable scores. The option to ‘opt-out’ is provided to remove that incentive and encourage participation in discussion even at the end of the semester.
- The instructor reserves the right to revise this policy if the number of make-up quizzes becomes unmanageable.

MISSED EXAM POLICY

- Similarly to the missed quiz policy, a student who misses a midterm exam has the following two options:
 - (1) Increase the weight of the final exam to 45% of the total grade (25% for the final exam, as originally planned, plus 20% for the missed exam) OR
 - (2) Take a slightly harder make-up exam.
- If a student misses both midterm exams, they must take a make-up exam for one of them.
- Every student must take the final exam. Health-related reasons for missing the final will be dealt with on a case-by-case basis.

ADDITIONAL COURSE POLICIES

- DSP approved students should inform the instructor at the beginning of the semester for any requested accommodation.
- Work-related travel must be scheduled outside of the mid-term and final examinations periods. Accommodation to take exams on different dates will be made only for family emergencies, religious observance and documented illness or health-related emergencies.
- Final grades will depend entirely on course performance as outlined above. Financial support requirements (e.g., minimum grade requirement for tuition reimbursement) cannot and will not be taken into consideration.

STATEMENT ON ACADEMIC CONDUCT AND SUPPORT SYSTEMS

The information below applies university-wide and is available at

<https://dornsife.usc.edu/ase/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 scientific misconduct, <https://policy.usc.edu/scientific-misconduct>.

Support Systems

Counseling and Mental Health: (213) 740-9355, 24/7 on call.

<https://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.

<https://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.

<https://studenthealth.usc.edu/sexual-assault>.

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

Office of Equity and Diversity (OED): (213) 740-5086 / Title IX: (213) 821-8298.

<https://equity.usc.edu>, <https://titleix.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.symphlicity.com/care_report

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

The Office of Disability Services and Programs: (213) 740-0776.

<https://dsp.usc.edu>

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Campus Support and Intervention: (213) 821-4710.

<https://campussupport.usc.edu>

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

Diversity at USC: (213) 740-2101.

<https://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

<https://dps.usc.edu>, <https://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

<https://dps.usc.edu>

Non-emergency assistance or information.

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

<https://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.