Fundamental Concepts of Analysis
MATH 425a, Fall 2023, USC
39647R: 11:00am
Josh Swanson, Ph.D.

Instructor and TA Information:

Role	Name	Email	Office	Office Hours
Instructor	Josh Swanson	swansonj@usc.edu	KAP 438 D	F 12:00-1:30 pm
TA	Xilu Zhu	xiluzhu@usc.edu	Math Center	See schedule

Course Content: The real number system, metric spaces, limits, continuity, derivatives and integrals, infinite series. We will cover Chapters 1-7 of Rudin. This course is the first semester of a standard introduction to real analysis.

Textbook: *Principles of Mathematical Analysis* (3rd edition) by Walter Rudin. This is the classic introductory analysis text. It accurately portrays the style of advanced, formal, proof-based mathematics. Students wishing for a gentler discussion are encouraged to consult Trevor Leslie's notes as a secondary source, which will be posted on Blackboard.

Grading: Your grade will consist of:

Lecture Participation	10%
Midterm	20%
Homework	40%
Final Exam	30%

There is no set translation from raw weighted grades to final letter grades. Instead, the course will be curved at the end of the semester to match typical score distributions for MATH 425a. The median is likely to be a B, though it will be adjusted depending on overall class performance. To give you a sense for how you are doing during the semester, after the midterm you will get your class rank and a letter grade estimate.

Lecture Participation: To encourage engagement, a portion of your grade will come from lecture participation. This will typically take the form of brief group activities during MWF lecture, graded on completion. You may miss up to 20% of lecture participation points with no penalty to your grade (via $\min(\text{raw} \cdot 100/80, 1)$), so you should not hesitate to stay home during the semester if necessary.

Exams: You are allowed one 8.5×11 inch sheet of notes for each exam, front and back. You must create your note sheet yourself, though printing out your own work is acceptable. Calculators and all other electronic devices are not allowed. The final will be cumulative. You must be physically present for the exams. You cannot pass without taking the exams.

Midterm	Friday, October 6th, 2023	During lecture
Final	Wednesday, December 6th, 2023	11am-1pm in lecture room

Homework: Since the vast majority of mathematical learning happens by doing rather than by passively listening, homework is a key portion of this class and is a very substantial portion of your grade. You are strongly encouraged to *work together on homework* but you **must write up your solutions separately**. Homework will be posted on the course web site most weeks and will be due on Gradescope. See the calendar on Blackboard for the homework schedule. You may miss up to 10% of homework points with no penalty to your grade (via $\min(\text{raw} \cdot 100/90, 1)$).

Late Work and Absences: You may ask your TA for a 1-2 day extension on homework once or twice during the semester for any reason. As noted above, you may automatically miss up to 10% of homework points and up to 20% of lecture participation points without penalty to your final grade, so you do not need to be explicitly excused for lecture absences unless you are out for more than a week. Lectures will not be recorded, however lecture notes will be posted on a Google Drive folder accessible from Blackboard.

If you have an emergency which prevents you from being able to physically take an exam (illness, death in the family, COVID-19 quarantine, etc.), contact me *as soon as possible* and we will work something out. If you miss the midterm for good reason, your final exam may be weighted more heavily to compensate.

Exam Philosophy: I put a lot of thought into grading. I believe strongly in difficult exams that test both your basic computational understanding of the material *and* your conceptual mastery. Consequently, my exams frequently have relatively low averages, often with no perfect scores, which can sometimes be a jolting experience for (particularly younger) students. The important thing to keep in mind is that your final grade will be curved. You will be assigned a reasonable final letter

grade which will be consistent with historical and contemporary norms for the course. Statistically, I am a slightly easy grader. From my experience teaching thousands of students, you have a roughly 99% chance of passing if you simply turn in every assignment, so focus on doing your best and have faith that grades will work themselves out.

Academic Integrity: You must follow the USC Student Conduct Code and act with academic integrity at all times. All of your submitted work must reflect your own understanding as the result of an honest effort and it must be written up separately in your own words. Copying from your fellow students or other sources is a serious violation. In particular, you may not use "tutoring" services which simply provide answers. Suspected violations will be reported to the Office of Academic Integrity.

Accommodations: It is important to me personally and the University broadly to provide reasonable accommodations for individuals with disabilities. Contact the Office of Student Accessibility Services (OSAS) *as early as possible* if you need accommodations.