

MATH 525a

Fall 2020

Professor Ken Alexander

Phone: 213-740-3797

Office: KAP 424E. During the pandemic I will be there only rarely; class and office hours will be done online.

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Office hours: Monday 2-3 pm; Wednesday 11am - noon and 5-6 pm; or by appointment. During office hours, send me an email if you want to meet, and within 5 minutes I'll set up a meeting. Outside of office hours, email at least 1-2 hours ahead and we will set up a time.

Grader: To Be Announced

Text: *Real Analysis: Modern Techniques and their Applications* (2nd ed.) by G. B. Folland

Prerequisite: A solid proof-based undergraduate course in real analysis, such as 425a at USC, preferably including exposure to general metric spaces.

Lectures: They will be done synchronously, meaning that everyone who can attend will be present online together at the same time, MWF 10:00 - 10:50 am, while I lecture and take questions. Recordings will be accessible on Blackboard for those whose time zone makes live attendance impossible. Generally the format is that I create pdf's, then share them during the lecture, while talking about the content and taking questions.

Homework will be given every 7-10 days. It must be submitted as a pdf via Blackboard (no jpeg photos!) You will need an app to scan the homework **as a pdf**; there are many free or low-cost ones such as Adobe Scan or Apple Notes. On each assignment a few selected problems will be graded. It is OK to help each other solve homework problems, but it's not OK to turn in essentially identical solutions--once you have discussed homework problems so that you understand better what to do, you should write the solutions on your own. Homework will be accepted up to 2 lectures late, with a 20% penalty. Not accepted more than 2 lectures late. The deadline for both on-time and late homework is the end of the lecture hour (not the end of the day.)

Exams: One midterm plus final. Depending on available technology and students' time zones, exams may be synchronous "in-class" exams which everyone takes at same time, or "take-home" exams which you are given 24-48 hours to do. This will be determined during the semester. Tentative midterm date is Friday October 2. Final is Monday November 23, 8-10 am (if in-class.) The final is cumulative but with greater emphasis on material after the midterm.

Missed exams: There will be no makeup exams. In exceptional cases, with a written excuse, if you miss the midterm I will base your grade on the final plus homework.

Grading: Homework 35%, midterm 25%, final 40%.

Basis for grading homework and exams: For full credit, you must present a logically valid proof. If your proof is incorrect or incomplete, you may receive partial credit to the extent that your attempt reflects:

- (a) Plausible choices of theorems, arguments, and proof techniques to try, for the type of proof sought;
- (b) An understanding of what needs to be proved. This means knowing what would be sufficient to show, or how the hypotheses are relevant or useful in progressing toward the conclusion (e.g. what theorems they enable one to use);
- (c) A proof that is correct in what it proves, even if that differs a little from what is asked to be proved.

Approximate schedule:

Preliminaries and Chapter 0: 3 lectures
Chapter 1: 11 lectures
Chapter 2: 11 lectures
Chapter 3: 9 lectures
Chapter 5 (part): 7 lectures

Auditing: If you want to attend the class without getting credit, you must register for an audit.

Everything in this syllabus is in principle tentative; if necessary it will be adjusted during the semester.

Statement for Students with Disabilities: Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

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 Section 11, *Behavior Violating University Standards* <https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct/>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the Office of Equity and Diversity <http://equity.usc.edu/> or to the Department of Public Safety <http://capsnet.usc.edu/departments/departments-public-safety/online-forms/contact-us>. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. The Center for Women and Men <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.