

Real Analysis

MATH 525a, Fall 2018

MWF 10-10:50am, KAP 140

Instructor: Juhi Jang

Office: KAP 416E

E-mail: juhijang@usc.edu

Office hours: 11-12pm on Mondays and 1-2pm on Fridays

Grader: Calum Rickard (crickard at usc dot edu)

Textbook: *Real Analysis, Modern Techniques and Their Applications, Second Edition* by Gerald Folland, Wiley Interscience

Topics: Measure and integration over abstract measure spaces, Radon-Nikodym theorem, Fubini's theorem, convergence theorems, differentiation.

Homework: Homework will be assigned about every 7 to 10 days. The assignment and due dates will be announced on Blackboard. Discussion and collaboration is allowed, but you have to write up work with your understanding. If you use other sources, you are required to state them in the homework. Late submissions will not be accepted.

Exam: One in-class midterm (Monday, October 8) and final exam (Monday, December 10, 8-10am)

Grade: Homework (30%), Midterms (30%), Final (40%)

Course information, assignments, and grades will be posted on Blackboard.

Tentative list of topics to be covered

Measures

σ -algebras, measurability, outer measures, Borel measures, Lebesgue measure

Integration

measurable functions, simple functions, Monotone Convergence Theorem, Fatou's Lemma, Dominated Convergence Theorem, Lebesgue integral, modes of convergence, Fubini-Tonelli Theorem

Signed measures and differentiation

Signed measures, Radon-Nikodym theorem, Maximal functions, Lebesgue differentiation theorem, functions of bounded variation

Statement on Academic Conduct and Support Systems

Statement on academic integrity

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>.

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. SCampus, the Student Guidebook, contains the University Student Conduct Code (see University Governance, Section 11.00), while the recommended sanctions are located in Appendix A. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>.

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://adminopsnet.usc.edu/department/department-public-safety>. This is important for the safety of the 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 <http://sarc.usc.edu> describes reporting options and other resources.

A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the American Language Institute <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. The Office of Disability Services and Programs <http://dsp.usc.edu> provides certification for students with disabilities and helps arrange the relevant accommodations.

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 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. Website for DSP (<http://dsp.usc.edu>) and contact information: (213) 740-0776 (Phone).

Emergency preparation/course continuity in a crisis

If an officially declared emergency makes travel to campus infeasible, USC Emergency Information <http://emergency.usc.edu> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.