

Math 6320, Introduction to Real Analysis 2
Spring 2016

Class meetings: MWF 1:00-1:50 p.m. in ECCR 118

Instructor:

Dr. Judith Packer
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<http://spot.colorado.edu/~packer/166320.html>

Office hours: MWF, 11:00 p.m. - 12:00 p.m., or by appointment

Prerequisites: This course has as a prerequisite the course Math 6310, Introduction to Real Analysis 1, or the instructor's approval.

Text: "*Real Analysis: Modern Techniques and Their Applications*", G.B. Folland, John Wiley and Sons, 1999. We will cover most of Chapters 4 through 7 and part of Chapter 8 of the textbook. Another useful reference is the text "*Real Analysis*", by H.L. Royden and Patrick Fitzpatrick, 4th Edition, Prentice Hall.

Course outline: Topics to be covered include: a brief review of topological spaces, locally compact Hausdorff topological spaces, the Stone-Weierstrass Theorem, the Arzela-Ascoli Theorem; Elements of functional analysis, including normed vector spaces, linear functionals, the Baire Category Theorem, Hilbert spaces; Basic theory of L^p - spaces, definitions and examples; the dual of L^p -spaces, Minkowski's inequality, Hölder's inequality, interpolation of L^p -spaces; Radon measures: positive linear functionals on $C_C(X)$ and the Riesz representation theorems, regularity of measures, the dual of $C_0(X)$, products of Radon measures; Elements of Fourier analysis: convolutions, the Fourier transform, summation of Fourier integrals and series and applications of Hilbert space theory, pointwise convergence of Fourier series, Fourier analysis of measures. Other topics from the textbook will be covered as time permits.

Assessment: Grades will be based on two in-class midterms (20% each), five or six homework assignments assigned during the course of the semester consisting mostly of problems from the text (30%), and a comprehensive final exam (30%). You are encouraged to work together on homework, although each student must submit an individual write-up. Late homework will not be accepted.

Test and exam dates:

Midterm 1: Friday, February 19, in class

Midterm 2: Wednesday, March 30, in class

FINAL EXAM: Wednesday, May 4, 4:30 p.m. – 7:00 p.m. in class.

THERE WILL BE NO MAKE-UP EXAMS, so make sure now that you have no conflicts!

Important Dates:

- **Jan. 27 (Wed.):** Last day to drop a course without being assessed tuition and fees for that course and without having a “W” appear on the transcript for that course.
- **March 18 (Fri.):** Last day to drop a course without petitioning the dean. (Tuition assessments apply, depending on date course is dropped.) Also, this is the last day for students to make arrangements with me if they have three or more final exams on the same day or two final exams scheduled to meet at the same time.
- **April 29 (Fri.):** Last day for students to withdraw from the university for Spring semester. All withdrawals are assessed 100% of tuition and fees (\$0 refund) and W grades are posted to transcripts.

Accommodations for disabilities: If you qualify for accommodations because of a disability, please submit to me a letter from Disability Services in a timely manner (for exam accommodations provide your letter at least one week prior to the exam) so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities. Contact Disability Services at 303-492-8671 or by e-mail at dsinfo@colorado.edu.

If you have a temporary medical condition or injury, see Temporary Injuries under Quick Links at Disability Services website (www.colorado.edu/disabilityservices/) and discuss your needs with your professor.

Religious observances: Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, assignments will either be rescheduled or dropped from grading calculations depending on the nature of the conflict. If you have a conflict, please advise me as soon as possible so that arrangements can be made. See full details at <http://www.colorado.edu/policies/observance-religious-holidays-and-absences-classes-andor-exams>

Miscellaneous University Rules & Regulations:

- **Honor Code:** All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include: cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council (honor@colorado.edu; 303-725-2273). Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). Additional information on the Honor Code can be found at

<http://www.colorado.edu/policies/student-honor-code-policy>

- **Classroom behavior policy:** Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. See policies at

<http://www.colorado.edu/policies/student-classroom-and-course-related-behavior>

http://www.colorado.edu/osc/#student_code

- **Statement on Discrimination and Harassment:** The University of Colorado Boulder (CU-Boulder) is committed to maintaining a positive learning, working, and living environment. The University of Colorado does not discriminate on the basis of race, color, national origin, sex, age, pregnancy, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy in admission and access to, and treatment and employment in, its educational programs and activities. (Regent Law, Article 10, amended 11/8/2001). CU-Boulder will not tolerate acts of discrimination or harassment based upon Protected Classes or related retaliation against or by any employee or student. For purposes of this CU-Boulder policy, "Protected Classes" refers to race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. Individuals who believe they have been discriminated against should contact the Office of Institutional Equity and Compliance (OIEC) at 303-492-2127 or the Office of Student Conduct and Conflict Resolution (OSC) at 303-492-5550. Information about the OIEC, the above referenced policies, and the campus resources available to assist individuals regarding discrimination or harassment can be found at the OIEC website

<http://www.colorado.edu/institutionalequity/>