

Math 8330, Functional Analysis 1
Fall 2014

Class meetings: MWF 3:00-3:50 p.m. in ECCR 110

Instructor:

Dr. Judith Packer
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Office hours: MWF, 1:00 p.m. - 2:00 p.m., or by appointment

Prerequisites: Math 5150 and 6320 (Linear Algebra and Real Analysis 2), or the equivalent.

Text: “*A Course in Functional Analysis*”, Second Edition, John B. Conway, Graduate Texts in Mathematics, vol. 96, Springer, New York, NY, 1990. We will cover most of Chapters III, IV and V, and parts of Chapter VI from the text (Chapters I and II can be reviewed, but I understand the material was covered in Math 6320 this past Spring). For your reference, other useful books are: “*Functional Analysis*”, Second Edition, by W. Rudin, McGraw-Hill, 1991, and “*Banach Algebra Techniques in Operator Theory*”, Second Edition, by R. Douglas, Graduate Texts in Mathematics, vol. 179, Springer, New York, NY, 1998.

Course outline: Topics to be covered include: A review of Banach space theory – bounded linear functionals and the Hahn-Banach Theorem, and bounded linear operators between Banach spaces, the Open Mapping Theorem and Closed Graph Theorem, the Uniform Boundedness Principle; locally convex topological vector spaces, continuous linear functionals on topological vector spaces, subspaces, extension of linear functionals and the generalized Hahn-Banach Theorem, convexity and the Krein-Milman theorem, Other topics will be covered as time permits.

Assessment: Grades will be assigned on homework assignments (60%) and a project (40%).

Homework: 60% of your final grade will be come from your performance on homework, which will be assigned every two weeks or so.

Final Project: 40% of your final grade will be come from your performance on a project on a specialized topic in functional analysis to be chosen in consultation with the instructor. The project will have both oral and written components: you must give a 25-minute oral presentation on all or some of the material contained in a paper you have written. The presentations of these projects will be given during the last two weeks of classes.

Important Dates:

- **September 3 (Wed.):** Last day to add a course without the instructor's signature.
- **September 10 (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.
- **October 31 (Fri.):** Last day to drop a course without approval signatures via MyCUInfo; last day for students having three or more final exams on the same day to make arrangements to change their final exam schedule.

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 (<http://disabilityservices.colorado.edu/>) 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/fac_rel.html

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/honor.html>
<http://www.colorado.edu/academics/honorcode/>
- **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/classbehavior.html>
http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student_code

- **Statement on Discrimination and Harrassment:** 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, disability, creed, religion, sexual orientation, or veteran status 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, or veteran status. Individuals who believe they have been discriminated against should contact the Office of Discrimination and Harassment (ODH) at 303-492-2127 or the Office of Student Conduct (OSC) at 303-492-5550. Information about the ODH, the above referenced policies, and the campus resources available to assist individuals regarding discrimination or harassment can be obtained at <http://hr.colorado.edu/dh/>