

MAT 702 – Functional Analysis – Spring 2012

Course Description: Norms, seminorms, and inner products on linear spaces. Standard theorems on linear functionals and operations. Dual spaces and weak topologies, classical spaces and their duals. Applications. *Prerequisites:* MAT 631, 661, 701.

Textbook: *A Course in Functional Analysis (2nd ed.)* by John B. Conway, ISBN 978-0387972459. We will cover most of Chapters I through V.

Class Time and Location: MWF 11:40–12:35, Carnegie 219.

Instructor: Leonid Kovalev, lvkovale@syr.edu, 315.443.1487, office Carnegie 213C.

Office Hours:

- Monday 3:30–4:30
- Tuesday 11–12
- Wednesday 3:30–4:30
- Thursday 11–12
- Sunday 3:30–4:30
- And any time my door (Carnegie 213C) is open.

Class webpage <http://lvkovale.mysite.syr.edu/702> is where homework assignments and other announcements will be posted.

Grading: The grades will be based on homework (30%), two midterm exams (20% each), and final exam (30%).

Homework will be collected at the beginning of class on the days posted on the class webpage. No late homework will be accepted. You are encouraged to discuss the homework problems with your classmates and to work together, but submitted assignments must be written up individually. One lowest homework score will be dropped.

Midterm Exams will be given in class on **February 22** and **March 30**. The time and place of the cumulative **Final Exam** will be announced in class. There will be no make-ups: a missed exam counts as zero unless you present a valid excuse from a physician or the Dean's office. If the absence is excused, your grade on the relevant portion of the final will be used to replace the missed exam.

Attendance and Participation: You are expected to attend and participate in class. If you miss a class, you are responsible for obtaining notes for that class from a student who attended. It is also your responsibility to find out about any announcements made in class.

Learning Goals:

- Understanding the nature and role of deductive reasoning in mathematics
- Ability to use and understand the usage of mathematical notation
- Ability to follow proofs and other mathematical discourse
- Ability to write rigorous proofs of mathematical statements

Tips for success in this course:

- It is absolutely essential that you understand how to solve all the assigned problems. Once you understand how to solve a problem, write your solution down neatly (better yet, in LaTeX) and in full detail with explanations that make your reasoning clear.
- Don't fall behind. If you are having difficulties keeping up with the material, see me immediately to discuss the problem.
- Take advantage of office hours (or of instant messaging for quick questions).
- Discussing problems with a classmate is very useful.
- Questions in class are encouraged.
- Expect to work hard. Don't get discouraged if you find some of the material difficult. Be persistent and patient.

Students with Disabilities: If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), <http://disabilityservices.syr.edu>, located in Room 309 of 804 University Avenue, or call (315) 443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible. You are also welcome to contact me privately to discuss your academic needs although I cannot arrange for disability-related accommodations. Making arrangements with ODS takes time. Do not wait until just before the first test.

Academic Integrity: The Syracuse University Academic Integrity Policy holds students accountable for the integrity of the work they submit. Students should be familiar with the Policy and know that it is their responsibility to learn about instructor and general academic expectations with regard to proper citation of sources in written work. The policy also governs the integrity of work submitted in exams and assignments as well as the veracity of signatures on attendance sheets and other verifications of participation in class activities. Serious sanctions can result from academic dishonesty of any sort. For more information and the complete policy, see <http://academicintegrity.syr.edu>