

MAT 412 – Foundations of Calculus – Spring 2012

Course Description: Introduction to the foundations of calculus covering topics from the following: the real number system, functions, limits, sequences, infinite series, continuity, and uniform continuity. Students will develop their ability to think deductively, analyze mathematical statements, and apply mathematical ideas to the solution of new problems. Most importantly, they will learn to write proofs of mathematical statements related to the topics covered in this course.

Textbook: *Introduction to Real Analysis (4th ed.)* by W. Wade, ISBN 978-0132296380. The course material is based on Chapters 1–5.

Class Time and Location: MWF 9:30–10:35, Carnegie 300.

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/412> is where homework assignments and other announcements will be posted.

Grading: The grades will be based on homework (25%), weekly quizzes (5%), three midterm exams (15% each), and final exam (25%). The grading scheme will be no stricter than: 93 for A, 90 for A-, 87 for B+, 83 for B, 80 for B-, 77 for C+, 73 for C, 70 for C-, 60 for D.

Homework will be collected at the beginning of class on the days posted on the class webpage. Most homework problems will be done on paper, while others will be web-based (on WebWork). 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.

Quizzes will be given on the same days when homework is collected, and will cover the same topics as homework. They will mostly consist of True/False questions. One lowest quiz score will be dropped.

Midterm Exams will be given in class on **February 8, March 5, and April 9**. The cumulative **Final Exam** is scheduled by the Registrar for **May 8, 8–10am**. 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>