Instructor: Prof. Bruce Reznick, 327 Altgeld Hall, 333–4284, reznick@math.uiuc.edu. My phone has voice mail and I frequently check and reply to my email, including weekends. Office hours are by appointment. I take them seriously, and they can usually be arranged within 24 hours. You are also encouraged to ask me questions immediately before, during and after class. I enjoy answering questions by email (which you can get credit for, see below), and so that I can post the (anonymized) question and my answer on our webpage for all to see. This page will have “class diary” summarizing the class day by day, providing links to handouts, and containing my responses to all questions sent to me by email. I also have an ongoing page of useful mathematical links, to which you are invited to contribute.

http://www.math.uiuc.edu/~reznick/math424F16.html

http://www.math.uiuc.edu/~reznick/F16links.html

A phone and e-mail list will be distributed once the class stabilizes. It is my policy not to give individual homework help on pending problems. But if you ask a question in class or in email, I can further explain the underlying mathematics to everybody. Finally, I’m terrible with names; please don’t take it personally.

Text and Syllabus: The text is Introduction to Analysis by Maxwell Rosenlicht. The official syllabus reads: “Continuity, compactness and completeness underlie much of modern mathematics and its applications. The course develops these concepts in the metric space setting, after which the fundamentals of calculus are rigorously established. Chapter 1 - omit; Chapter 2 - The real number system (2 hours); Chapter 3 - Metric spaces (9 hours); Chapter 4 - Continuous functions (6 hours); Chapter 5 - Differentiation (4 hours); Chapter 6 - Riemann integration (8 hours); Chapter 7 - Interchange of limit operations (6 hours); Leeway, quizzes, and exams - (8 hours). Present the Riemann-Darboux integral using a supplementary source such as chapter 17 of Fundamental Mathematics by D’Angelo and West.” I will provide supplementary notes for any topic not covered in Rosenlicht. Be aware that (reading, understanding, constructing) proofs are an integral part of this course.

Homework Content and Policy: It is an implicit assignment to read ahead in the textbook before class. This will make my lectures more comprehensible! Written homework will be assigned to be due weekly on a day to be determined. Please staple or paper-clip your homework sheets (no folding over corners), and consider writing more than one draft. You are expected to spell correctly and write complete, grammatical sentences when possible in this and all your University assignments. Homework solutions will be distributed when the assignment is due. No late homework is accepted, but the lowest two homework scores (possibly zero) will be omitted in computing your homework average. In rare instances, you may be excused from an assignment, but the dropped scores are intended to cover minor illnesses, weddings, etc.

Most homeworks will be a combination of various types of problems. Some problems will be taken from the text (no solutions in the back). Some problems will be close variants of problems from old exams, or other reasonable exam questions. These will be marked by the
rubric (€). Other problems might be good for homeworks and bad for exams, because they require you to do more reflection or computation than is sensible on a tightly-timed test. There will also be a small number of extra credit questions.

Collaboration in studying and working the homework is strongly encouraged! Collaboration without comprehension is a waste of time. You may be able to find websites which help you understand the material in this class. Don’t copy homework solutions from online sources. (I know how to google!) You are not allowed to collaborate on extra-credit problems.

Exam Policy: There will be Three Hour Exams, at the usual intervals. Painful recent experiences cause me to remind you that the dates of exams are not subject to individual negotiations. You will need serious documentation in order to qualify for a makeup exam. All exams will be closed-book and closed-note, and will resemble the homeworks. The Final Exam is comprehensive, and somewhat harder than the Hour Exams. The Final must be held at the scheduled time: 7:00-10:00 PM, Wednesday, December 14 which is the second day of Finals Week.

Class Participation: I’ve been doing this for the last few years and it’s worked pretty well. A small portion of the grade is the easiest to achieve. Send me at least five emails during the semester with questions about material from the lectures or the reading from the book (not the homework or exams), at least two weeks apart. The reason is that smart math students tend to be both somewhat shy and somewhat reluctant to admit publicly when they don’t understand something. Your questions are of great value to me in helping structure my explanations in class. Put “424 Class Participation” in the subject line!

Grading Policy: Keep in mind that I am grading your work, not you as a person. Each Hour Exam counts 20%, the Final Exam counts 40% and the Homework counts 15%. Class participation counts 5%. The lowest 20% is dropped. (Again, painful recent experiences cause me to state that a missed exam cannot be dropped from the computation of the grade.) All grades are numerical. The highest possible grade cutoffs are: A/B – 90%, B/C – 80%, C/D – 70%, D/E – 60%, by which I mean “A-/B+”, etc. I will try to keep you posted on any curving as the semester progresses. I am aware that this is an honors course and so the overall grade distribution should be fairly high. There are two exceptions to the numerical grading for people who take all three Hour Exams: anyone who scores 96% on the Final gets an A and anyone who scores 75% on the Final will pass. Experience shows that these exceptions rarely make a difference.

Philosophy: When I was an undergrad math major, my very favorite subject was real analysis, and I look forward to teaching some math that was close to my heart as a student. But a course is designed for its students not its instructor. It will be a privilege and a pleasure for me to spend the semester talking and listening to you. Education is not a zero-sum game when done correctly. I do not consider you my adversaries, and hope the feeling will be mutual. Become an active participant in Math 424. Let the ideas of this course get under your skin and visit your dreams. These are serious steps towards becoming a mathematician.