

Instructor: Ravi Fernando, ravif@illinois.edu.

- Section F1, MWF 2:00-2:50pm in 132 Davenport Hall
- Section G2, MWF 3:00-3:50pm in 132 Davenport Hall

Office hours: times TBA in Altgeld 213.

Course description: The goal of this course is to introduce students to rigorous mathematical reasoning and proof-writing, and to study some of the fundamental structures that mathematicians are interested in. Topics include logic and the language of proofs, divisibility and congruence, sets and functions, mathematical induction, relations and equivalence relations, cardinality, and sequences and series of real numbers.

Textbook: The first three-fourths of the class will follow Donaldson and Pantano, *An Introduction to Abstract Mathematics*, in its entirety.¹ You can find it online for free, or as a course reader from the bookstore for about \$13. The last fourth of the class will follow Lebl, *Basic Analysis I*, up to section 2.4; this is also freely available online.

Grades: Your final numerical grade will be computed as follows:

- Final exam: 30%
- 3 midterm exams: 20% (highest score) + 20% (middle score) + 10% (lowest score)
- Homework: 20%

When assigning final letter grades, I will only curve up. Thus a cumulative average of 90% guarantees at least an A-, an 80% guarantees at least a B-, and so on.

Exams: We will have three in-class midterms on February 7, March 6, and April 5. According to the university final exam schedule, our final exam slot is as follows:

- F1 (2pm class): Monday, May 6, at 7-10pm;
- G2 (3pm class): Monday, May 6, at 8-11am.

The final exam will be cumulative; midterms will not be cumulative except to the extent that mathematics is inherently cumulative.

Homework: Homework will typically be assigned every week. Each homework set will consist of about six problems, most of them requiring you to write proofs. This may be fewer problems than you are used to in your math classes; however, you should expect to spend a longer time crafting each proof than you would solving a more computational math problem. Each week, only a subset of the problems will be graded in detail (based on both mathematical correctness and clarity of exposition); the others will be graded for completion.

¹At the time of this writing, this book is actively being rewritten. I have uploaded an older version to the Files tab of Canvas; all homework problem numbers will refer to this copy until further notice.

Homework assignments will be posted to the Files tab of Canvas, and you will submit your completed homework on Gradescope (you should be added to the Gradescope course soon). Your lowest two homework scores will be dropped. Late homework will not be accepted without a documented excuse.

Attendance and make-ups: It is expected that you will attend every class, unless you feel sick or have a similarly good excuse (COVID exposure, athletic travel for UIUC, death in the family, religious observance, etc.) In these cases, your absence will be excused; I will make my lecture notes available so that you can see what you missed. If you need to miss an exam (with a valid, documented excuse), please contact me as soon as possible. Most likely, I will address this by adjusting the weightings of your other exams, rather than giving a make-up.

Since I am teaching two consecutive lectures of the same class, you may occasionally have a conflict that can be remedied by attending my other class. For normal lectures, this is fine, provided that there are enough seats for everyone. However, please do not attend the “wrong” lecture repeatedly or (especially!) on exam days without first clearing this with me.

Academic honesty: As always, you are expected to follow the UIUC student conduct code. You are encouraged to work on homework in groups; however, your final write-up must be your own. If you are unsure whether something is allowed, please ask.

Resources for students with disabilities: To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact me and the Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES you may visit 1207 S. Oak St., Champaign, call 333-4603 (V/TTY), or e-mail a message to disability@illinois.edu. A direct link to apply for services at DRES:

<https://www.disability.illinois.edu/applying-services>

Mental health: Significant stress, mood changes, excessive worry, substance/alcohol misuse or interferences in eating or sleep can have an impact on academic performance, social development, and emotional wellbeing. The University of Illinois offers a variety of confidential services including individual and group counseling, crisis intervention, psychiatric services, and specialized screenings which are covered through the Student Health Fee. If you or someone you know experiences any of the above mental health concerns, it is strongly encouraged to contact or visit any of the University’s resources provided below. Getting help is a smart and courageous thing to do for yourself and for those who care about you.

- Counseling Center (217) 333-3704
- McKinley Health Center (217) 333-2700
- National Suicide Prevention Lifeline (800) 273-8255
- Rosecrance Crisis Line (217) 359-4141 (available 24/7, 365 days a year)

If you are in immediate danger, call 911.

Community of Care: As members of the Illinois community, we each have a responsibility to express care and concern for one another. If you come across a classmate whose behavior concerns you, whether in regards to their well-being or yours, we encourage you to refer this behavior to the Student Assistance Center (217-333-0050 or <https://odos.illinois.edu/community-of-care/referral/>). Based on your report, the staff in the Student Assistance Center reaches out to students to make sure they have the support they need to be healthy and safe.

Further, as a Community of Care, we want to support you in your overall wellness. We know that students sometimes face challenges that can impact academic performance (examples include mental health concerns, food insecurity, homelessness, personal emergencies). Should you find that you are managing such a challenge and that it is interfering with your coursework, you are encouraged to contact the Student Assistance Center (SAC) in the Office of the Dean of Students for support and referrals to campus and/or community resources.