Syllabus - CAS MA 293 Spring 2025

Discrete Mathematics

Professor: Juanita Duque-Rosero - juanita@bu.edu.
Course hours: M 1:25 - 2:15 PM (64-86 Cummington Mall PSY B39) TR 2:00 - 3:15 PM (5 Cummington Mall BRB 122).
Office hours: M 2:30 - 3:30 PM and W 4:00 - 5:00 PM, or by appointment (at CDS 311).
Text: Discrete Mathematics: An Open Introduction, Oscar Levin and The Book of Proof, Richard Hammack
Course website: Blackboard via `learn.bu.edu`.

Material

This course will serve as an introduction to mathematical reasoning. We will study propositional logic, set theory, elementary probability theory, and combinatorics. The goal of this class is to develop skills at problem solving, critical thinking, and communicating mathematics.

Teaching methods and philosophy

I firmly believe in Federico Ardila's axioms and I encourage you to think about them at every step of your learning process:

Axiom 1 Mathematical potential is equally present in different groups, irrespective of geographic, demographic, and economic boundaries.

Axiom 2 Everyone can have joyful, meaningful, and empowering mathematical experiences.

Axiom 3 Mathematics is a powerful, malleable tool that can be shaped and used differently by various communities to serve their needs.

Axiom 4 Every student deserves to be treated with dignity and respect.

Expectations. These are my expectations for you: treat me, your classmates, and yourself with respect; come to class on time and prepared to learn; actively work and participate in class; and follow BU's academic conduct code. This is what you can expect from me: treat everyone with respect; come to class on time and prepared; do my best to support your class interactions and to help you succeed; and have open channels of communication during class, office hours, or by email.

Class format. Classes will usually consist on a combination of lectures and small group class work. We will try to build an active learning environment, so please come to class willing to participate!

Course objectives

The main goal of this class is to develop your problem solving, reasoning, and communication skills in mathematics. Part of this process involves developing your ability to read and write proofs. We will do so by studying combinatorics, logic, set theory, and elementary probability.

Academic honesty

All Boston University students are expected to maintain high standards of academic honesty and integrity. It is your responsibility to be familiar with the Academic Conduct Code (for CAS, for GRS), which describes the ethical standards to which BU students are expected to adhere and students' rights and responsibilities as members of BU's learning community. All instances of cheating, plagiarism, and other forms of academic misconduct will be addressed in accordance with this policy. Penalties for

academic misconduct can range from failing an assignment or course to suspension or expulsion from the university.
Representing another person's work as your own is academic dishonesty, and will be reported as such. This includes using AI, as AI is based on the writing of people.

Grading

The course grade will be based upon the scores on class participation, homework, two in-class midterm exams, and a final exam as follows:

- Class participation: 10%
- Homework: 30%
- Your weakest midterm: 15%
- Your strongest midterm: 20%
- Final exam: 25%

This grading policy is subject to change, but grades will not decrease as a result of changes.

Letter grades will be based on the following percentages:
A 93%, A- 90%, B+ 87%, B 83%, B- 80%, C+ 77%, C 73%, C- 70%, D 60%

Homework. Homework will be due one week after it is assigned. You are welcome to work with others, but the assignment **must be written up on your own** and you must acknowledge your collaborators on the first page of your write-up. Please try to solve the problems unaided before you seek online forums. If you learned how to solve a problem this way, that's fine and you will still receive credit, but please cite where you found the solution, and write the solution in your own words. Representing another person's work as your own is academic dishonesty, and will be reported as such. This includes using AI, as AI is based on the writing of people.
Your lowest homework score will be dropped.

Attendance policy

You are expected to attend each class session unless you have a valid reason for being absent. The BU attendance policy is here. You may miss up to three days of in-class work without it affecting your grade (there is no need to email me about this). If you have a good reason to miss multiple classes, please contact me as soon as possible so that we can make the appropriate accommodations.

Resources

Math Tutoring Room. You can drop in on the Math Tutoring room in CDS 261. The schedule of tutors and their expertise can be found here https://www.bu.edu/math/tutoringroom/.

Mental health and wellness. The academic environment is challenging, and classes are not the only demanding part of your life. There are a number of resources available to you on campus to support your wellness, including: mental health services at SHS (https://www.bu.edu/shs/behavioral-medicine), which allows you to book initial evaluation appointments online (http://patientconnect.bu.edu/); and Student Wellbeing (https://www.bu.edu/studentwellbeing/). Please make me aware of anything that will hinder your success in this course.

Accommodations

Students with documented disabilities, including learning disabilities, may be entitled to accommodations intended to ensure that they have integrated and equal access to the academic, social, cultural,

and recreational programs the university offers. Accommodations may include, but are not limited to, additional time on tests, staggered homework assignments, note-taking assistance. If you believe you should receive accommodations, please contact the Office of Disability & Access Services to discuss your situation. This office can give you a letter that you can share with me outlining the accommodations you should receive. The letter will not contain any information about the reason for the accommodations.