

Math 2603 – Summer 2026

Introduction to Discrete Mathematics

Instructor: TBA

Course Description:

Mathematical logic and proof, mathematical induction, counting methods, recurrence relations, algorithms and complexity, graph theory and graph algorithms.

Learning Objectives:

The main themes of this course are logic and proof, induction and recursion, discrete structures, combinatorics and discrete probability, algorithms and their analysis, and applications and modeling. Throughout the course, you will be expected to demonstrate your understanding of these themes by being able to do each of the following:

- **Logic and Proof:** Students will be able to understand mathematical reasoning in order to read, comprehend, and construct mathematical arguments, which serves as the foundation for subsequent discussions of methods of proof.
- **Induction and Recursion:** Students will be able to apply recursive thinking to solve combinatorial or algorithmic problems and write induction proofs.
- **Discrete Structures:** Students can work with discrete structures, which are the abstract mathematical structures used to represent discrete objects and relationships between these objects. The discrete structures we will study include the sets of integers and rational numbers, general sets, Boolean algebras, functions, relations, graphs and trees, formal languages and regular expressions, and finite-state automata.
- **Combinatorics and Discrete Probability:** Students will possess the ability to count or enumerate objects and determine discrete probabilities using basic techniques of combinatorial analysis.
- **Algorithms and Their Analysis:** Students will be able to perform mathematical analysis of algorithms, including specification of an algorithm, verification that it works properly, and analysis of computer memory and time required to perform it.
- **Applications and Modeling:** Students will learn to model real-world problems with discrete mathematics and solve these problems with abstract reasoning.

Course Materials:

The required textbook is *Discrete Mathematics with Applications (5th ed., 2018)* by Susanna S. Epp. We will not cover the entire book, but we will at least cover select sections of Chapters 1-12. Some homework problems will be assigned from the book, and we will have a quiz in studio after covering each chapter. Some of the material from the book may not be covered in class, so

you may be expected to read portions of the book on your own time. You will be notified in the event this occurs.

Studio:

In addition to lecture, you are enrolled in a studio section for this course. You are expected to attend both lecture and studio sessions. There will be a graded quiz in studio on each chapter of the textbook, roughly once a week. On non-quiz days, students will work in small groups on worksheets, and the TA may work through problems on the board as needed.

Homework:

There will be homework assignments due at regular intervals during weeks in which there is no exam (dates will be provided in Canvas). Note that this includes the first week of class.

The assignments will contain exercises that you are not required to turn in, and not all submitted problems will be graded. You are strongly encouraged to complete all of the problems. In addition, it is recommended that you complete the “Test Yourself” exercises at the end of each section of the textbook.

Homework must be submitted online through Gradescope (which can be accessed through Canvas). Your lowest homework grade will be dropped. Each student will be granted up to two 48-hour no-penalty extensions; requests for an extension must be submitted before the assignment deadline.

Homework must be typed pdf files – handwritten homework assignments will not be accepted. Homework assignments will be created with LATEX. You will be provided a .tex file and a .pdf file for each homework assignment, but you may use whatever software you prefer.

Quizzes:

There will be one quiz for each chapter of the book, taken in studios. Quizzes will be graded for completion, not correctness. Completed quizzes are worth 1 point each, and your lowest two quiz grades will be dropped. Each quiz will be announced by the end of the preceding day.

Exams:

There will be three in-class individual exams and a final exam. Dates will be announced via Canvas at the beginning of the semester. Only under extreme extenuating circumstances will you be able to take the final exam at a different time or date. Early travel plans (including already-purchased tickets) are not an acceptable reason for this. A practice midterm for each exam will be posted the week prior.

Grades:

Your final grade will be computed as follows:

- Studio Quizzes: 10%
- Homeworks: 20%
- Midterm Exams (15% each): 45%
- Final Exam: 25%

The usual grading scale will be used: at least 90% for A, 80% for B, 70% for C, and 60% for D. These cutoffs might be adjusted, but only in the downward direction (to make letter grades higher). In the event of a curve, only your final overall percentage grade for the course will be curved. Individual assessments will not be curved as we go along.

Regrades:

Regrade requests must be submitted through Gradescope. In order to be eligible for a regrade, you must submit a regrade request no more than 36 hours after the graded work is returned.

Missed Work:

Late homework will only be accepted under extenuating circumstances. If you have an illness, accident, or family emergency that prohibits you from submitting an assignment on time, taking an exam, or participating in any other aspect of this course, you must contact the Office of the Dean of Students and provide any necessary documentation. Please also notify me as soon as possible. In case of an excused absence, I will work with you to make up any missed work.

AI policy:

You are not allowed to use artificial intelligence or other online resources to solve homework problems before they are due. Doing so will be regarded as a violation of Georgia Tech Academic Honor Code. Outsourcing your thinking to AI is giving up your agency to think and reason and be a human being. It is also cheating yourself out of a practice opportunity, and you will miss out on the joy of discovering the solutions yourself. AI and online resources may be used for supplemental learning that is not directly related to the homework assignments. However, keep in mind that they can be wrong, or they may rely on concepts not yet covered in class.

Collaboration policy:

I encourage you to work together on homework problems. However, if you decide to collaborate with your peers, you must follow these rules:

- Acknowledge any collaboration (i.e., write “I worked with so-and-so on this assignment” at the top);

- You must write up your solutions on your own, and once you have started writing, you may not share any of your solutions with your peers.

Expectations:

As members of the Georgia Tech community, we are committed to creating a learning environment in which all of our students feel safe and included. Because we are individuals with varying needs, we are reliant on your feedback to achieve this goal. To that end, we invite you to enter into dialogue with us about the things we can stop, start, and continue doing to make the classroom an environment in which every student feels valued and can engage actively in our learning community. We also require that all students and instructors of the course commit to abide by the [Student-Faculty Expectations](#) defined in the Georgia Tech Catalog.

Accommodations for Students with Disabilities:

Georgia Tech complies with the regulations of the Americans with Disabilities Act of 1990 and offers accommodations to students with disabilities. If you are a student with learning needs that require special accommodation, contact the [Office of Disability Services](#) (or call them at 404.894.2563) as soon as possible, to discuss your needs and to obtain an accommodations letter. Then, please also make an appointment with me as soon as possible to discuss your learning needs, and I will work with you to ensure your accommodations are provided.

Academic Integrity:

Students are expected to abide by [the honor code](#) at all times. Any evidence of cheating or other violations of the Georgia Tech Honor Code will be submitted directly to the Office of Student Integrity. Cheating includes, but is not limited to:

1. Using a calculator, books, or any form of notes on quizzes or tests.
2. Copying directly from any source, including friends, classmates, tutors, internet sources (including Wolfram Alpha), or a solutions manual.
3. Allowing another person to copy your work.
4. Taking a test or quiz in someone else's name, or having someone else take a test or quiz in your name.
5. Asking for a regrade of a paper that has been altered from its original form.
6. Communicating with another student in any manner regarding any quiz or exam during the time period when the assessment is available.