

# MATH 2106 Syllabus

Foundations of Mathematical Proof, Section D, 3 credit hours

Fall 2026

## Instructor Information

Instructor: Dr. Julia Lindberg

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## General Course Information

### Meeting information

This course meets Tuesday and Thursday from 12:30pm-1:45pm in Skiles 168

### Description

This is the first course that emphasizes understanding and writing proofs. It provides a transition from the problem-solving approach of calculus to the entirely rigorous approach of advanced courses such as MATH 4107, 4150 and 4317. Topics include fundamentals of logic and set theory, basic properties of integers and elementary number theory, and sequences as well as thorough development of the basic proof techniques: direct, contrapositive, existence, contradiction, and induction. This course will also introduce proofs in analysis and algebra.

### Course Learning Outcomes

A student who has taken this course should be able to:

1. use logical connectives and quantifiers correctly and with understanding,
2. determine the validity of an argument,
3. prove a given statement directly, indirectly (contradiction and contraposition), or using induction,
4. construct a proof by exhaustion,
5. prove existence and uniqueness,
6. find a counterexample to disprove a given statement, and
7. write well-organized, grammatically correct, and logically sound mathematical arguments.

### Prerequisites

MATH 1502 or MATH 1512 or MATH 1504 or MATH 1555 or MATH 1552 and 1553 (or equivalent)

### Required Course Materials

- Discrete Mathematics with Applications, Susanna S. Epp, 5th Edition
- Abstract Algebra: Theory and Applications by Thomas Judson (Annual Edition, 2019). (Available at <https://www.math.colostate.edu/~pries/467/Judson12.pdf>)

## Grading Policy

Your final grade will be calculated as follows:

- 25%: Homework (Best 8 of 10)
- 75%: Exams (Best 3 of 4)

The grade cutoffs will be determined as follows:

A: 90-100 B: 80-89.99 70-C: 79.99 D: 60-69.99 F: 0-59.99

## Description of Graded Components

**Homework** You will be assigned 10 homework assignments. Of your 10 assignments, you are allowed to drop your lowest two scores. The scores from your top 8 assignments will comprise the 25% of your homework score.

All homework assignments must be completed on time. All homework must be submitted by 11:59pm on the due date. No late homework will be accepted. I will post homework on Gradescope which is linked to our course Canvas page. You will complete the assigned problems and turn in an electronic copy of your assignment on Gradescope. You may hand write your assignment then scan and submit it or you may type your assignment. All handwriting must be legible and the arguments must be clear to receive credit. You may drop the lowest 2 homework grades. Collaboration on homework is encouraged but every student must submit their own assignment and must cite the students they collaborate with on the front of the assignment.

**Exams** There will be 4 exams. The first three exams will be given in class and the fourth exam will be given during the final exam slot designated by the university. The first three exams will include material covered in class up to that point and the fourth exam will be cumulative. Your worst exam score will be dropped. There will be no make-up exams. If you need to miss an exam for any reason, you will be assigned a score of 0 for that exam.

## Course Policies

### Attendance and Participation

I recommend reading the section of the textbook covered in lecture prior to coming to class. While attendance is not part of the grade, I recommend attending all lectures in person and coming to office hours regularly. You should start the homework early and ask questions. I highly encourage collaborating on homework and studying for exams with other students in the course.

### Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review Georgia Tech's Honor Code and the student Code of Conduct.

Any student suspected of cheating or plagiarism on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

### Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services (404-894-2563) as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

## **Student-Faculty Expectations Agreement**

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.