

Math 6307 Syllabus

Foundations of Mathematical Proof, Math 2106, Section A, 3 Credits

Fall 2026

Instructor Information

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General Course Information

Description

An introduction to proofs in advanced mathematics, intended as a transition to upper division courses including Abstract Algebra I and Analysis I.

Course Learning Outcomes

In this semester, the topics we will cover include:

- Fundamental mathematical including sets, logic, equivalence relations, and functions.
- Development of the basic proof techniques including direct, contrapositive, existence, contradiction, and induction.
- Introduction to proofs in abstract algebra.
- Introduction to proofs in analysis.
- Selected additional topics, as well as partial orders, upper/lower bounds, and \limsup/\liminf , if times allows.

Required Course Materials

1. Book of Proof by Richard Hammack (3rd edition, 2013), <http://www.people.vcu.edu/~rhammack/BookOfProof/>
2. Abstract Algebra: Theory and Applications by Thomas Judson (Annual Edition, 2017), <http://abstract.pugetsound.edu/aata/>
3. Elementary Analysis: The Theory of Calculus by Kenneth A. Ross (2013, should be available at least on campus internet or through GT VPN), <https://link.springer.com/book/10.1007/978-1-4614-6271-2>

Grading Policy:

Final exam 40%; midterms 20%, 20%; homework 20% total.

A \geq 90; B \geq 80; C \geq 70; D \geq 60.

Assignments

- Weekly homework, 20% total
- Midterm 1, 20%
- Midterm 2, 20%
- Final exam, 40%

Description of Graded Components

Homework can be discussed, but must be written down independently (no human or AI help).

All the exams are in class, "closed book", and "closed notes".

Course Policies

Attendance and/or Participation

This will be an active classroom, where you will be expected to participate.

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.

Core IMPACTS

[Core IMPACTS](#) is the University System of Georgia's General Education curriculum. If you are teaching a course that counts towards Core IMPACTS, you should include a syllabus statement about the Core area and associated [career competencies](#). [This resource](#) developed by the Center for Excellence in Teaching and Learning and Online Education at Georgia State University includes template syllabus statements for each of the Core IMPACTS areas that you may adapt for your course.

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.

Pre- &/or Co-Requisites

[MATH 1502](#) or [MATH 1512](#) or [MATH 1504](#) or [MATH 1555](#) or (([MATH 1552](#) or MATH 15X2 or MATH 1X52) and ([MATH 1553](#) or [MATH 1554](#) or [MATH 1564](#) or [MATH 1522](#) or MATH 1X53))

Collaboration, Group Work, and Use of Generative AI

You are allowed to work in groups on all homework and out-of-class assignments (and you may use my solutions), but any work you turn in must be written in your own hand without AI help.

All exams are in class, "closed book", and "closed notes".

Extensions, Late Assignments, & Re-Scheduled/Missed Exams

Late homework will be penalized accordingly or rejected.

Make-up exams are given only for illness, approved Institute activities, or religious observances.