Math 220: Mathematical Reasoning and Proof
SYLLABUS IN PROGRESS

Fall 2026

Instructor: David Zureick-Brown ("DZB")
Email: dzureickbrown@amherst.edu
Office: 302 Seeley Mudd

Hours: Mon 2:30-3:30
Wed 2:30-3:30
Thu 1:30-3:30

Section 02: MWF 10:05-10:55am
207 Seeley Mudd

Textbook: "Introduction to Abstract Mathematics" by Bonde and Keane

Course website: https://dmzb.github.io/teaching/2026Fall220/

Math Fellow(s):	TBA	TBA@amherst.edu	times	and	dates	TBA
			TBA	TBA	TBA	TBA

Learning objectives: we will cover the following topics.

- Logic – statements, negation, converse, contrapositive, quantifiers.
- Mathematical prose and rigor – how to write mathematics correctly and in complete sentences.
- Techniques of proof – "direct" proofs, proof by contradiction, induction, proof by "cases".
- Sets, relations, functions – the building blocks of mathematics.
- Some additional topics (e.g., cardinality, different sizes of infinity).

Getting help

Office Hours: Please stop by to see me (in Seeley Mudd 302) during my scheduled office hours; you can stop by unannounced during these times! If you have scheduling conflicts with my office hours then you are also welcome to make appointments to see me (outside of my regularly scheduled office hours) at a time which is mutually convenient. To schedule an appointment simply send me an email! (In which case, please include your availability in your message.)

Math Fellows: Visit our TAs' office hours, too (see above).

Peer tutoring: If you need regular one-on-one help from a tutor, we can (probably) help to set up a (free) peer tutor. To do so, please send me an email.

Homework is **due Fridays, 5 minutes before classtime**, via Gradescope. The assignment should be submitted as a single file.

Homework will only be graded for completeness, and solution guides will be available by the end of the day on the day homework is due.

See the document here

https://dmzb.github.io/teaching/2026Fall220/assignments-F26-220.pdf

for a list of all assigned work and a weekly breakdown of the course content.

Grading: Your grade will consist of the following. Your lowest quiz will be dropped.

Weekly Homework Assignments	10%
Weekly quizzes	20%
2 midterms and a comprehensive final exam	70% =
Best exam	25%+
Second best exam	20%+
Third best exam	15%

Grade scale: A lower bound on your final grade is given by the following table.

A = 93-100	B+ = 87-90	C+ = 77-80	D+ = 67-70	F = 0-63
A- = 90-93	B = 83-87	C = 73-77	D = 63-67	
	B- = 80-83	C- = 70-73		

Typical rubric: Proofs will typically be graded on the following rubric (out of 10 points).

10	Flawless
9	Basically correct, but not literally 100% correct
7	Mostly correct, but with at least one error
5	Numerous errors
2	Proof contains a fundamental misunderstanding
0	No part of the proof was correct

Problems worth less points will be scaled down accordingly.

Assignment and exam dates:

Weekly Assignments	Generally due Fridays, 5 minutes before classtime, via Gradescope.
Midterm 1	Friday, October 23 (tentative)
Midterm 2	Friday, November 20 (tentative)
Final Exam	TBA (tentative)

Exam problems will be extremely similar to the (easier and medium difficulty) problems from class and the homework.

If you have any conflict with these test dates, PLEASE let me know at least two weeks in advance.

Weekly quizzes: Instead of graded homework, there will be weekly quizzes. The quizzes will be on the next class meeting after the day homework is due (so if homework is due on Friday, the quiz will be at the beginning of class on Monday; if Monday is a holiday, then it will be on the following Wednesday; see the assignments sheet for any exceptions to this).

The quizzes will be 1-3 short questions. Each question on the quiz will be identical to problems from the homework and class, and will almost always ask you to recall a definition from the previous week's content.

Please show up on time for quizzes; there will not be any make up quizzes.

Late submissions. Since solution guides will be provided immediately after the due date, late submissions are not allowed.

Honor Code: No electronics that can connect to the internet are allowed during an exam or quiz, and any such electronics must be in your bag at all times. This includes your phone and smart glasses, and if you leave the exam for any reason (e.g. bathroom) I might ask to see your phone. Violating this rule or any other part of the honor code will result in failing the course. If there are any questions about the integrity of your written work, then I reserve the right to ask you to explain your solutions.

Exams will be proctored.

Remember that copying another student's (or AI's) work is a violation of the Honor Code and will be treated as such. Please review Amherst College's Honor Code, available here.

You are free to consult any sources (animate or inanimate) while doing your homework; working in groups is encouraged! On the other hand, you are expected to make an honest attempt to do every problem on your own before consulting other sources. Learning and retaining knowledge is a back and forth process of trying problems on your own and asking for help or for a small hint. Please do not copy a solution that you do not understand or you are not sure is correct onto your assignments.

Plagiarism: a good rule of thumb to avoid plagiarism is the following – when doing the final write up of a problem, do not have any textbooks, web pages, or classmate's write up open in front of you. If you get stuck when writing up an assignment, go back and look again; just make sure that you organize the mathematics in your head before writing a proof rather than copying a solution from some source. **This is a generous policy. Please do not abuse it.**

Inclusivity: I put great value in welcoming each and every student into the classroom, regardless of their sex, race, nationality, gender identity, socioeconomic status, ability (intellectual or physical), religious beliefs, or sexual orientation. Each student brings with them to the classroom a unique set of experiences and I expect everyone to contribute to providing an inclusive environment. If, at any time, you experience a situation within this course that you feel challenges your sense of inclusion or accurate assessment of achievement, then please notify me as soon as possible.

Accessibility and accomodations. Amherst College complies with the regulations of the Americans with Disabilities Act of 1990 and offers accommodations to students with disabilities. Please do not hesitate to ask for accommodations or to contact me about accommodations. (Please also do so as soon as possible.) For more information, please go here.

Attendance policy. Attendance is always optional (except for in class exams and quizzes). I do not have notes to provide; if you miss class, please ask a classmate for notes. If you are sick, I would prefer that you stay home from class.