This course covers the basics of mathematical reasoning and problem solving, with a focus on writing logically sound mathematical arguments and analyzing such arguments. The goal is to prepare students, especially incoming math majors, for higher math courses which involve proofs and rigor, such as linear algebra, group theory, and real analysis. We plan to cover the following topics in the textbook (subject to changes).

- Chapter 1: Fundamentals of mathematical arguments (definitions, theorems, proofs, counterexamples, elements of Boolean Algebra).
- Chapter 2: lists, sets, quantifiers.
- Chapter 3: binomial coefficients.
- Chapter 4: mathematical induction, recurrence relations.
- Chapter 5: functions, the pigeonhole principle.
- Chapter 7: basic number theory (divisibility of integers, modular arithmetic, prime factorizations).

Grading Your grade is determined by in-class exercises (10%), homework (20%), tests (30%), final (40%).

Lectures and in-class exercises I have posted a tentative class schedule (incomplete and subject to frequent updating) with topics and readings from the textbook and Lecture Notes (on BB - Blackboard). The notes are meant to be a useful guide and supplement to the textbook by highlighting the main ideas as well as giving additional explanations and material. We will learn the material in the order presented in the notes, not the book. Do the reading before coming to class. You are encouraged to participate actively in class and take full advantage of the classroom as a community of learning. Participation includes attending every class on time, paying attention, asking questions, engaging in discussion, and collaborating with classmates on in-class exercises. If you have to miss a class, make sure you get notes from a classmate.

Homework Weekly problem sets, usually due on Thursday, are posted on Blackboard. Solving problems is an essential part of learning mathematics. I suggest that by Tuesday, you should have tried to solve the problems on your own, and post questions and hints for each other on Blackboard Discussions. You will receive an extra credit up to 5% for homework for your participation on Blackboard discussion. On Wednesday, you may come to my office hours (12 – 1:30 and 3 – 4:30) for further discussion with me and your classmates. Late homework will NOT be accepted.

Tests and Final Exam There are three one-hour tests (equally weighted) and a 2-hour cumulative final exam during the final exam week. The lowest test (or a missed test) can be replaced by the final exam if the latter is higher. All students must take the final exam at the scheduled time (unless you have a legitimate conflict). In particular, do not make travel plans that conflict with the final exam.

Comments
- It is the responsibility of each student to be aware of information given in class during an absence, and to be aware of all assignments and any announced changes in the syllabus.
- The University is committed to the highest standards of intellectual integrity. Academic dishonesty of any type will not be tolerated.
- If there are concerns about the course or instructor that cannot be resolved with the instructor, please contact Prof. David Massey (Math Teaching Director), 529NI, d.massey@neu.edu, (617) 373-5527.
- The University expects every student to complete the online TRACE survey evaluation of their courses at the end of the semester.