Office. Classes are online, so the office listed is inaccessible for now; the office phone is not answered. IH-1149b, 718-951-5000/2734, IH-1156 (the main Mathematics Department Office) 718-951-5246.

Office Hours. You may contact me home at reasonable hours. No fixed office hours as long as classes are online.

List price: $168.00 (available on Amazon for much less). The textbook is available at the College Bookstore in the basement of Boylan Hall.

Exams. Class exams count 60%, the final exam counts 40% in the course grade. For online teaching, 7 to 10 half-hour exams are planned at the end of the class. This might change as I will need to assess the needs for online teaching. About two of these grades on these exams will be dropped if this improves your grades, except for the last few exams, to discourage behavior that one, being satisfied with the grades, does not take the last few exams. A grade zero assigned to an exam missed without a proper excuse will not be dropped either. No makeup exams will be given. In case of a missed exam, please talk to me how to re-weigh your other exams. A grade less than 30 out of 100 on the final will result in a course grade of F regardless of the class exam grades. Irregular attendance or being late to class often may result in a grade worse than indicated by exam averages. Final exam date: 1 to 3 p.m., Monday, December 14, posted as an assignment on Blackboard. Available until 11:59 pm. December 15. Late submissions lose points, except in case of a proper excuse.

Web Site. Course material may be put on the Web site:
http://www.sci.brooklyn.cuny.edu/~mate/intro_proofs/
Note carefully that the character before “mate” in the above address is a tilde, found on the top left-hand side of the keyboard.

Department Web Site. http://depthome.brooklyn.cuny.edu/math/

Syllabus. (What follows is the official class syllabus. The actual material covered, and the order in which it is covered may be slightly different, to best take advantage of the resources offered by the textbooks.)

1. How to communicate mathematics; sets (Chaps. 0 and 1) 2 weeks
   a. Structure and guidelines of mathematical writing
   b. Common words and phrases in mathematics
   c. Sets, subsets, and set operations
   d. Indexed collections, partitions, and Cartesian products of sets

2. Logic (Chaps. 2) 2 weeks
   a. Statements, negations, disjunctions, and conjunctions of statements
   b. Implications and biconditional
   c. Tautologies and contradictions, logical equivalence
   c. Characterizations of statements, quantified statements, and their negations

3. Direct proof and proof by contrapositive (Chap. 3, §§1-4) 1 week
   a. Trivial and vacuous proofs, direct proofs
   b. Proof by contrapositive, proof by cases

4. Proof in elementary number theory (§§11.1-2 and §§4.1-2)
   a. Division properties of integers and related proofs
   b. The division algorithm and proofs involving congruence of integers

5. Proofs by contradiction and disproof (§§5.1-2, §§7.1-7.2)
   a. Proof by contradiction
   b. Counterexamples and disproving statements
6. Relations (Chap. 8) 1 week
   a. Relations, reflexive, symmetric, transitive, and equivalence relations
   b. Properties of equivalence classes and examples
7. Functions (Chap. 9) 1 week
   a. Definition, the collection of functions, one-to-one, onto, and bijective functions
   b. Composition of functions and inverse functions, permutations
8. Mathematical induction (§§6.1-4) 1 week
   a. The well-ordering principle and induction principle, and related examples of proofs
   b. More examples of proofs
9. Cardinalities of sets, and the real number system (Chap. 10) 2 weeks
   a. Countable sets, uncountable sets, and the Schroeder-Bernstein Theorem
   b. Development of the real number system, and its uncountability
   c. The order completeness of the real number system, and Cauchy completeness
10. Other topics (Proofs is Calculus, Chap. 12, and Proofs in Group Theory, Chap. 13) may be considered if there is time.

*The inclusion of the following in the syllabus is mandated by Brooklyn College*

**Academic Integrity.** The faculty and administration of Brooklyn College support an environment free from cheating and plagiarism. Each student is responsible for being aware of what constitutes cheating and plagiarism and for avoiding both. The complete text of the CUNY Academic Integrity Policy and the Brooklyn College procedure for implementing this policy can both be found at this site:

   [http://www.brooklyn.cuny.edu/bc/policies](http://www.brooklyn.cuny.edu/bc/policies)

If a faculty member suspects a violation of academic integrity and, upon investigation, confirms that violation, or if the students admits the violation, the faculty member MUST report the violation.

**Plagiarism.** Submitting the work of another person or persons without proper attribution is considered plagiarism, and will be treated accordingly. Proper attribution requires identifying the source of your work. Failure to do so may result in a charge of plagiarism, and students can be subject to administrative actions, including

- A 0 grade on the assignment or exam,
- An F grade in the course.

Additional actions may be taken by the College, including admonition, warning, censure, disciplinary probation, restitution, suspension, expulsion, complaint to civil authorities, and ejection.

**Students with disabilities.** In order to receive disability-related academic accommodations students must first be registered with the Center for Student Disability Services. Students who have a documented disability or suspect they may have a disability are invited to set up and appointment with the Director of the Center for Student Disability Services at 718-951-5538. If you have already registered with the center for Student Disability Services please provide your professor with the course accommodation form and discuss your specific accommodation with him/her.