Ling 160b Mathematical Methods in Linguistics
Course Syllabus

Instructor: Sophia A. Malamud
Office: Volen 137
Phone: x6-2225
Office hours: TBA (email for appointment)

Meeting times: Block N T,F 1:40 PM–3:00 PM

Special note:
If you are a student with a documented disability on record at Brandeis University and wish to have a reasonable accommodation made for you in this class, please see me immediately

Course description:
This is an undergraduate and introductory-graduate course presenting the key mathematical concepts which belong to the basic repertoire of linguistic methods. The course is recommended for students considering research in linguistics or cognitive science, or intending to continue on to graduate programs in linguistics and related fields.

It is an approved elective for the undergraduate major and minor, as well as for the MA in computational linguistics.

The course has two goals: first, to strengthen the student's math background in the areas most widely relevant to linguistic theorizing, and second, to provide a broad overview of linguistic applications for various mathematical tools that would be of interest to students in linguistics, philosophy, and the cognitive and social sciences.


Note, that this textbook is listed as “recommended” in the Bookstore, because they were only able to source hardcover copies. However, paperback copies of the Sixth edition are available on Amazon. The text is, in fact, required, rather than just recommended.


Tentative Schedule (note – each topic covers the stated mathematical topics, as well as linguistic applications of these topics):
Week 1: Set theory, relations, functions
Week 2: Properties of relations, partially ordered sets
Week 3, 4: Lattices, Boolean Algebra
Week 5, 6: Counting
Week 7, 8, 9: Probability and Statistics
Week 10, 11: Graphs, Trees, Paths
Week 12+: overflow, or if we have time, Decision Theory and maybe even Game Theory

Requirements:
Homework practice 10% - obligatory to qualify for a grade
Problem sets 50%
Midterm quiz 20%
Final quiz 20%