Formal Foundations of Linguistics

Course Information

Linguistics 680 — Autumn 2003
MWF 11:30–12:48 — Derby Hall (DB) 030

Instructor: David Dowty (209 Oxley Hall, 292-5400)
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Office Hours: __________________________


Course Objectives: The primary goal of this course is to introduce students to some mathematical techniques that serve as the formal foundations of several branches of linguistics — notably syntax, semantics, computational linguistics, and mathematical linguistics (though its relevance to linguistics is not limited to these fields). **Note:** This course does NOT cover every kind of mathematical tool that is used in linguistic research. In particular, it does not include statistics and tools for handling complex data that are used in experimental fields (e.g. phonetics, psycholinguistics, sociolinguistics, and certain kinds of computational linguistics). The department offers a different “tools” course devoted to these.

Four major areas are covered: **Set Theory, Logic, and Formal languages/Automata** (and some related topics). The main goal is mastering the tools themselves, but some examples are provided along the way of how they are applied to linguistic issues.

Homework: Because of the nature of the subject matter, it cannot be learned productively by reading a textbook and listening to lectures; rather, practice using these tools is the main learning method. For this reason, doing regular short homework assignments is important.

A homework assignment will be made at the end of most class sessions: this assignment is always due at the next class period. These assignments will be discussed on the date due, collected at the end of that class, and returned with comments. Students may work together with other students on these. To fulfill the course requirements, students must hand in at least 3/4 of the homework assignments (see below).

Classes: There are three lecture-discussions per week (M,W,F); in some weeks, I will hold a one-hour review session to discuss homework problems in more detail and do more practice with certain tools. But you are encouraged to visit me often during my office hours, to talk about
assigned problems or any other questions. Attendance is not required at classes and review sessions, but you should exercise good judgment in deciding what you need to attend. If/when you miss a class, you are still responsible for handing in the assignment due on that date by class time and also for finding out what assignment is due at the next class.

**Prerequisites:** There is no prerequisite, and no specific knowledge of logic, math, or linguistics will be assumed. But because the course moves rather quickly through a number of topics, prior experience with discrete mathematics, computer science, linguistics, or other technical/analytic subjects will be helpful.


Some additional optional and required readings will be placed on reserve in the Linguistics Department Library Reserve Shelf in 222 Oxley or xeroxed and distributed in class.

Please try to do all the assigned readings on the syllabus, if possible before the class for which they are assigned. Depending on how fast we progress, the dates in the syllabus may be shifted a session or two forward or backward as the course goes along.

**Course Requirements and Grades:**

1. In lieu of in-class exams, there will be five take-home problem sets. You will have about a week to complete each one. (The dates for these given in the syllabus are only approximate; exact dates for handout and return will be announced in class.) The problem sets are to be completed independently (unlike the homework), without consulting anyone other than the instructor. Each problem set counts 17% of the grade.

2. Homeworks will not be given a formal grade but will be marked “satisfactory”, “unsatisfactory” (or incomplete), or more rarely “excellent”. It is a course requirement to hand in at least 3/4 of the homework assignments (i.e. I recognize that things come up unpredictably that prevent you from doing every single one). Homework and class participation do not contribute a specific portion of your grade, but good work on these can tip a course grade upward that otherwise falls near the borderline between two grades.

3. You are also required to write a short review (at most 5 pages) of a linguistics research paper that uses formal tools from this course. I will hand out a list of articles, later in the course, that you can choose from for this review; more will be said about this assignment then. Your course grade will be based 83% on the four graded problem sets and 17% on the review paper.