

Math. 570: MATHEMATICAL LOGIC

Fall 2009

Prof. C. Ward Henson

MWF at 1:00 in Room 345, Altgeld Hall

This course gives a basic introduction to *First Order Logic* (Predicate Logic). No previous study of logic is assumed. Included in this course are:

- The compactness and completeness theorems for first order logic. The first of these is basic to the usefulness of nonstandard models. The second says that logical validity is equivalent to provability in a certain formal system, and provides a starting point for rigorous study of the foundations of mathematics.
- Elements of model theory.
- Elements of computability theory.
- The Gödel incompleteness theorem. This result says that in a strong enough system with effectively given axioms, not all true statements can be proved.

There will be a midsemester exam, a final exam, and regular homework.

Prerequisites: Mathematics 417 (undergraduate abstract algebra) or consent of instructor.

Text: *Mathematical Logic: Lecture Notes* is a text for Math 570 written by Prof. van den Dries. Copies will be given out at the first class. The current version can be found at his website; the direct link is <http://www.math.uiuc.edu/~vddries/410notes/main.dvi>.