Math 609 and Math 610 - Basic Modern Logic

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Modern logic is a very broad discipline with active branches in
Computer Science, Mathematics, and Philosophy. This two semester
course will focus on Mathematical Logic. However, students from
other departments should find the course rewarding since it will
provide a mathematical base for other areas of logic.

This course will provide an introduction to Model Theory,
Recursion Theory, and Set Theory. Given that this
is a basic graduate course there are certain topics that must be
covered. Among them are propositional logic, first order
predicate logic, the Completeness and Compactness Theorems,
Turing machines, computable sets, recursively enumerable sets
and degrees, Friedberg-Muchnik Theorem, the axioms of ZFC,
ordinals, cardinals, and the constructible universe. In
addition, we will hope to cover G\"{o}del's Incompleteness
Theorem, Tarski's Undefinability Theorem and the consistency of
GCH and AC. There may be some time to cover topics which can be
chosen according to the wishes of the class.