

## Model Theory and Set Theory (PMATH 733)

Fall 2018    Rahim Moosa

Tuesdays and Thursdays 1:00–2:20 in RCH 205

This is an introduction to mathematical logic.

It is a graduate course but it is open to advanced undergraduates.

The course is approximately one-third set theory and two-thirds model theory. The set theory will be naïve and the model theory will be semantic (i.e., no proof theory). There will be a small overlap with PMATH 432/632 (First Order Logic and Computability), but this latter course is neither a pre-requisite nor an anti-requisite.

*Topics in set theory.* Well ordered sets and ordinals, axiom of choice and equivalents, cardinals.

*Topics in model theory.* Semantics of first order logic, the compactness theorem (via ultra-products) and its consequences, quantifier elimination, algebraic examples, the Stone space of types (if time permits).

*Pre-requisites.* (Equivalent of) PMATH 347 and 348, or consent of instructor. Mathematical maturity.

*Courseware.* No textbook is required, the lectures will be self-contained and will follow Parts 1 and 2 of my notes “Set Theory and Model Theory” (Version 5), available as a course package at *media.doc* on the second floor of MC.