

## PMATH 433/733: **Model Theory**

Winter 2025 MWF 2:30–3:30 MC 4061

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This is a **new** course. Unlike the old course with the same number (Fall 2022 and earlier), this course is only about model theory. It is aimed at advanced undergraduate and graduate students with prior exposure to the fundamentals of mathematical logic. It has a focus on algebraic examples. It will be followed by a graduate topics course on model theory (PMATH 930) in the Fall of 2025.

*Pre-requisites.* (Equivalent of) PMATH 432, or consent of instructor.

*Topics.* Definable sets, quantifier elimination, algebraically closed fields, real closed fields, omitting types and prime models, interpretation and imaginaries, types, saturation, strongly minimal sets and the Zilber trichotomy, forking and independence.

*Reference Textbook.* David Marker's "Model theory: An introduction", will be a useful reference, but the lectures will be self-contained.

*Structure.* Lectures will be held MWF at 2:30 in MC 4061. I will hold office hours on Wednesdays, 3:30–5, or by appointment. This is an in-person course with no streaming or recorded video of lectures, and no Piazza discussion (on my part). The course does have a LEARN page. There will be about 10 assignments, submitted through Crowdmark on Thursdays, worth a total of 30%. The final exam will be scheduled by the Registrar and is worth 70%. There will be no midterm exam.