

Course Announcement
Mathematical Logic (PMATH 432/632)

Fall 2024 MWF 12:30–1:30 MC2035 Instructor: Rahim Moosa

This is a **new** course, being offered only for the second time. Unlike the pre-2023 course with the same number, this course is a broad (and hence necessarily not very detailed) introduction to mathematical logic, including *proof theory*, *model theory*, *computability theory*, and *set theory*.

It is aimed at advanced undergraduate and graduate students.

I will teach a **new** follow-up course on Model Theory (PMATH 433/733) in Winter 2025, for which Mathematical Logic is a prerequisite.

Pending approval, I hope to teach a graduate topics course in model theory (PMATH 930) in the Fall of 2025.

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

Required Textbook. Dave Marker’s **new** book entitled “An Invitation to Mathematical Logic”, Graduate Texts in Mathematical Logic, 2024.

Highlights.

- The completeness and compactness theorems of first order logic.
- Gödel’s incompleteness theorem.
- Zermelo-Frankel axiomatic set theory including the theory of ordinals.