

PMATH 930 Topics in Logic: **Model Theory**

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The focus of this course will be geometric stability theory, a part of model theory that has had significant applications to algebra, geometry and number theory. The main goal will be to prove Morley's 1965 theorem on uncountably categorical theories, viewed from a modern perspective. We will use the new book *A Course in Model Theory* by Tent and Ziegler, focusing on Chapters 4 through 8.

While this course is intended as a follow-up to the Model Theory and Set Theory course (PMATH 733) that I taught in the Winter of 2015, it is open to all graduate and undergraduate students who have some familiarity with first-order logic. A quick review of the basics of model theory will be included.

**Prerequisites:** First-order languages and structures, theories and their models, the compactness theorem, elementary equivalence and extensions, quantifier elimination. Roughly Chapters 1 to 3 of *A Course in Model Theory* by Tent and Ziegler.

**Objectives:** Types and saturation,  $\aleph_0$ -categorical theories, Morley's Theorem on  $\aleph_1$ -categorical theories, Morley rank, stability theory.

**Textbook:** *A Course in Model Theory* by Tent and Ziegler.