

Model Theory

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What is Model Theory?

Model theory can be roughly described as logic + algebra and it studies classes of mathematical structures from the logical perspective. Many branches of mathematics are titled \mathcal{L} -theory where \mathcal{L} is a placeholder for group, field, order etc. where a theory is a set of axioms/sentences written in a formal language, and a \mathcal{L} -model of such a theory is a structure that satisfies all the axioms. By the end of the course, you will be ready with the basic toolbox of model theory and know model theory of common mathematical structures.

Lecture I: Place of model theory in maths, syntax, structures, truth of a formula, theory, models

Lecture II: Embeddings, elementary equivalence, ultraproducts, compactness theorem

Lecture III: Lowenheim Skolem theorems, categoricity, Vaught's test

Lecture IV: Quantifier elimination, DLO, ACF, RCF, types