

## The Department of Mathematics

2017–18–B term

**Course Name** Introduction to Model Theory

**Course Number** 201.2.0091

**Course web page**

<https://www.math.bgu.ac.il/en/teaching/spring2018/courses/introduction-to-model-theory>

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**Office Hours** <https://www.math.bgu.ac.il/en/teaching/hours>

### Abstract

### Requirements and grading<sup>1</sup>

We will present some basic notions and constructions from model theory, motivated by concrete questions about structures and their theories. Notions we expect to cover include:

- Types and spaces of types
- Homogeneous and saturated models
- Quantifier elimination and model companions
- Elimination of imaginaries
- Definable groups and fields

**Prerequisites** Students should be familiar with the following concepts from logic: Languages, structures, formulas, theories, the compactness theorem. In addition, some familiarity with field theory, topology and probability will be beneficial.

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<sup>1</sup>Information may change during the first two weeks of the term. Please consult the webpage for updates



## Course topics

This course will cover a number of fundamentals of model theory including:

- Quantifier Elimination
- Applications to algebra including algebraically closed fields and real closed fields.
- Types and saturated models.

Given time, the course may also touch upon the following topics:

- Vaught's conjecture and Morley's analysis of countable models
- $\omega$ -stable theories and Morley rank
- Fraisse's amalgamation theorem.

**Prerequisites** Students should be familiar with the following concepts: Languages, structures, formulas, theories, Godel's completeness theorem and the compactness theorem.