

INTRODUCTION TO MATHEMATICAL LOGIC

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March 12, 2020: For current information of the covered material, please see Moodle and u:space websites of the lecture course.

Content:

Two of the main goals of the course is to provide proofs of the Theorems of Baldwin-Lachlan and Morley. The course will be self-contained and will assume only knowledge in logic covered by all standard bachelor level courses.

Lecture 1 (03.03.2020): We made a detailed review of material usually covered in bachelor level classes in logic (chapter 1 of [4]) including structures, extensions, substructures, generated substructures, homomorphism of structures, embeddings, isomorphism, languages, directed families of structures;

Lecture 2 (05.03.2020): The material corresponds to a great extent to material covered in Chapter 1 and 2 of [4]. It includes atomic diagrams, models of the atomic diagram of a given model, theories, consistency, elementary equivalence, elementary diagram of a structure, elementary substructures, Tarski's test, elementary directed families;

Lecture 3 (10.03.2020): We proved the theorem of compactness; considered the notion of a type, realization of types and proved the separation theorem. Corresponding material can be found in Chapter 2 of [4] and Section 1 of Chapter 3 of the same book.

REFERENCES

- [1] Marker, David *Model theory. An introduction.* Graduate Texts in Mathematics, 217. Springer-Verlag, New York, 2002. viii+342 pp. ISBN: 0-387-98760-6
- [2] Goldstern Martin; Judah, Haim *The incompleteness phenomenon.* A. K. Peters, Natick, Massachusetts, ISBN-10: 1568810938
- [3] Hodges, Wilfrid *A shorter model theory.* Cambridge University Press, Cambridge, 1997. x+310 pp. ISBN: 0-521-58713-1
- [4] Tent, Katrin; Ziegler, Martin *A course in model theory.* Lecture Notes in Logic, 40. Association for Symbolic Logic, La Jolla, CA; Cambridge University Press, Cambridge, 2012. x+248 pp. ISBN: 978-0-521-76324-0

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