

Models of arithmetic

2025 Fall

Lecturer: Zalán Molnár

Code of the course: BMA-LOTD-305.03, BMA-LOTD-305E.03

Aim of the course: This is a half-way course between a reading seminar and a lecture introducing participants to models of arithmetic. The course is planned to be an introduction to the field, however we presuppose some knowledge from model theory and recursion theory/Gödel's incompleteness theorems. Thus, it can be seen as a continuation of these courses.

Content of the course: We elaborate on topics including: Overspill principle, decidability of Presburger arithmetic, Parikh's Theorem, independence of the Paris–Harrington Theorem, MacDowell–Specker Theorem, Friedman's Embedding Theorem etc.

Grading criteria: Students have to work on and elaborate certain parts of the material by themselves. The grading will be based on these presentations.

References

- [1] David Marker. *An invitation to mathematical logic*. Springer. 2024.
- [2] László Csirmaz, Zalán Gyenis *Mathematical logic. Exercises and solutions*. Springer. 2022.
- [3] Richard Kaye *Models of Peano Arithmetic*. Oxford University Press. 1991.
- [4] Jaap van Oosten. *Introduction to Peano Arithmetic*. Lecture notes. 1999.