Mathematical Institute
Polish Academy of Sciences

COURSE DESCRIPTION

Course Name	Forcing
Supervisor	Piotr Koszmider
ECTS credit allocation	4 – IM PAN Ph. D. program; 6 - recommended for MA programs
Duration	One semester
Number of hours	30
Language	English or Polish, if every participant speaks Polish
Prerequisites	Knowledge of basics concerning ordinals, transfinite induction, Lebesgue measure, point set topology, truth values
Course content	The following topics will be covered in the degree depending on the preparation of the participants: 1) Basic single forcing and the structure of the independence proofs 2) The independence of the continuum hypothesis and other statements concerning cardinal arithmetic 3) Martin's axiom – consistency and applications 4) Undecidability of questions concerning the structure of the real line: measure and category 5) Proper forcing and the PFA 6) Special models: Sacks model, Cohen model 7) Iterated forcing 8) Consistency and independence results in various parts of mathematics
Recommended reading	K. Kunen, Set Theory, An introduction to independence proofs, North Holland 1980 Jech, Thomas Set theory. The third millennium edition, revised and expanded. Springer Monographs in Mathematics. Springer-Verlag, Berlin, 2003.
Learning outcomes	1) Knows the structure of consistency proofs using forcing 2) Can build simple examples forcing notions and decide if a given statement holds in the generic extension 3) Is able to construct iterations of forcing and prove preservation results
Assessment methods and criteria	Solving sets of Exercises and Exam
Remarks	