POSITIONAL GAMES

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Spring Semester 2015

Course number: 0366.4991.
Course webpage: www.math.tau.ac.il/∼krivelev/teaching/PosGames/PG.html
When and where: Wednesdays 15-18, Schreiber 007
Prospective audience: the course is intended for graduate and advanced undergraduate students in Mathematics and Computer Science.
Informal prerequisites: working knowledge of graph theory notions; knowledge of basic concepts in probability.
Grading: Home assignments will be given roughly every other week, and their solutions will be graded.

Syllabus (tentative)

1. Introduction, examples, general framework.
2. Strong games.
3. Maker-Breaker games.
4. Biased Maker-Breaker games, box game.
5. Biased connectivity and degree games.
6. Biased Hamiltonicity game.
7. Avoider-Enforcer games.
8. Waiter-Client games.
9. Fast wins and strong games again.
10. Games on random boards.
11. Miscellanea (time permitting).

Bibliography

1. J. Beck, **Combinatorial Games: Tic-Tac-Toe Theory**, Encyclopedia of Mathematics and Its Applications 114, Cambridge University Press, 2008.
2. J. Beck, **Inevitable randomness in discrete mathematics**, University Lecture Series, 49. Amer. Math. Soc., Providence, RI, 2009.
3. D. Hefetz, M. Krivelevich, M. Stojaković and T. Szabó, **Positional Games (Oberwolfach Seminars)**, Birkhäuser, 2014.
4. M. Krivelevich, *Positional games*, Proceedings of the International Congress of Mathematicians (ICM) 2014, Vol. 4, 355–379.