

Game Theory Exam Topics, Autumn 2025

1. Combinatorial games, existence of winning / non-losing strategies, strategy stealing, k -nim, Sprague–Grundy function, sums of games (sections 1.0–1.3.1)
2. Hackenbush; Erdős-Selfridge theorem and its consequences (sections 1.3.4 and 1.5.1)
3. Hex, Brouwer’s fixed point theorem (section 1.5.2)
4. Strategic games: domination, pure Nash equilibrium. Repeated games, Tit-for-Tat in repeated Prisoners Dilemma (sections 2.0–2.3)
5. Mixed Nash equilibrium, iterated elimination of dominated strategies. Proof of the Nash theorem using Brouwer’s fixed point theorem; existence of symmetric Nash equilibrium (section 2.4 and proof of Nash’s theorem from section 2.5)
6. Maxmin strategies, von Neumann’s minimax theorem on two-player 0-sum games (sections 2.6–2.7)
7. Evolutionary stability, replicator dynamics (section 2.10)
8. Vickrey auction, Top trading cycles algorithm, group strategy-proofness (sections 4.3.1 and 4.4)
9. Stable matchings; popular and dominant matchings (section 4.5; only the parts mentioned in the lecture)
10. Stable assignment (hospitals-residents problem). Score limits in the university admission problem (section 4.6; only the parts mentioned in the lecture)

The section numbers above are for the Hungarian lecture notes. These and other resources are uploaded to the *Class Materials* folder in Teams.