

## Social Computing Models (מודלים בחישוב חברתי)

Prof. Moshe Tennenholtz ([moshet@ie.technion.ac.il](mailto:moshet@ie.technion.ac.il))

Inspired by the emergence of Internet commerce and advertising as well as social networks, the recent years have been flowering in establishing connections between computer science to the social sciences, and in particular economics. . This course will provide with the fundamental models one need to know in order to understand the foundations of work on these topics. It is a basic course as it is built only on familiarity with calculus and linear algebra, probability, and graph algorithms. It is however a relatively advanced basic course as it will show some of the basic results of the area rather than focus only on general introduction.

Below is a sketch of 13 weeks course:

1. Introduction to game theory
2. Congestion games
3. The analysis of auctions
4. Matching Markets / the existence of market clearing prices
5. Sponsored search markets and their analysis
6. Preference aggregation / Voting
7. Social Choice Functions
8. Voting in networks
9. Approximate mechanism design
10. Repeated games and on-line learning
11. Positive and negative relationships in social networks
12. Information cascades in populations / The Cascade Capacity in networks
13. Small world phenomena in networks and the analysis of decentralized search

The topics may be modified/extended as time permits. Each week consist of two hours lecture.

Part of the course will make use of the advanced material presented in “Networks, Crowds, and Markets” by Easley and Kleinberg (available on-line), while the rest of that book will serve for less technical home reading.

Grading will be done by a final exam (90% of grade) and exercises to be provided (10% of the final grade).