

Title and Code of Course:

Introduction to Social Network Analysis: Theoretical Basics and Applications

Instructor's Name: Gábor Péli, Prof. PhD.

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Credit Point Value: 6	Number of Lessons per Week: 1 (90 mins)	Type of Course: Seminar <input checked="" type="checkbox"/> Lecture <input type="checkbox"/>	Method of Evaluation: Oral Examination <input type="checkbox"/> In-Class Presentation <input checked="" type="checkbox"/> Other <input checked="" type="checkbox"/>
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Course Description:

Understanding the emergence and functioning of social networks is a major challenge for the social sciences, as well as for the policy-makers. Their importance and visibility have tremendously increased with the dawn of the Internet and online social media. Studying social networks involves a variety of social science disciplines including sociology, economics, political science, psychology and anthropology. Network science has also a solid mathematical foundations upon which large-scale empirical research can be built. The course introduces these in a user-friendly way accessible for social science students.

The course gives an understanding on the network basics, in parallel with demonstrating their use in real-world examples and applications. How do different effects – like contagious diseases, hypes, gossips, opinions – spread on networks? How do we close ourselves into ‘information bubbles’, and with which methods can fresh information penetrate these bubbles? Which kind of network positions give extra power for the incumbents and which network nodes are peripheral in importance?

The seminar activities fall into two types. In one, crucial theoretical aspects are communicated, followed by the joint discussion of pertaining examples and applications. This is complemented with classes, in which (groups of) students present network papers assigned to them by the tutor. The presentations are followed by the tutor's update, with related theoretical findings and applications, which the participants jointly discuss.

Bibliography:

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Albert-László Barabási (2016) *Network Science*. Cambridge University Press, UK.

Labianca, Giuseppe & Brass, Daniel. (2006). Exploring the Social Ledger: Negative Relationships and Negative Asymmetry in Social Networks in Organizations. *Academy of Management Review*. 31. 596-614.

Lőrincz, L., Koltai, J Győr, AF, Takács, K. (2019)
Collapse of an online social network: Burning social capital to create it? *Social Networks*, 57:43-53.

Károly Takács , Andreas Flache, Michael Mäs (2016) Discrepancy and Disliking Do Not Induce Negative Opinion Shifts. *PlosOne*. June 22, 2016 <https://doi.org/10.1371/journal.pone.0157948>

Tóth, G., Wachs, J., Di Clemente, R. *et al.*(2021) Inequality is rising where social network segregation interacts with urban topology. *Nature Communications* **12**, 1143
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Péli, G (2013) Network Modeling with Cellular Automata: Revisiting the Issue of Dimensionality. *JOURNAL OF MATHEMATICAL SOCIOLOGY* 37 : 195-202.

Barabási, Albert-László. (2003). *Linked: How Everything Is Connected to Everything Else and What It Means for Business, Science, and Everyday Life*. Penguin Books.

Mark S. Granovetter (1973) The Strength of Weak Ties. *American Journal of Sociology*, 78, No. 6 1360-1380. <https://www.cs.cmu.edu/~jure/pub/papers/granovetter73ties.pdf>

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