# Social Network Analysis

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**Objectives**

Social network analyses investigate the relationships (arcs/edges) between individuals or organizations, such as friendship, advice, interaction or trust. In contrast to many other statistical approaches, one models the interdependencies between entities explicitly. Such a perspective allows the visualization and study of structural features of network structures such as centrality of network nodes. This module has two objectives. First, it gives an introduction to social network analyses and the modelling of networks and network dynamics. Second, it gives hands-on tutorials for conducting social network analysis in R.

**Learning outcomes**

By the end of this course, students will be able to

- understand the basics of social network analysis.
- have an overview on recent research that applies social network analysis.
- organise and manage network data using the statistical package R.
- replicate and advance empirical models in the published literature.
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**Evaluation**

Each session will have a required reading that students have to prepare in advance. The required readings will be indicated on the extended syllabus and form the basis for the discussions in class. In addition, students have to submit the following:

- One end-of-term essay (around 3000 words), which engages with one of the topics of the module and goes beyond the literature that is provided. Deadline for submission 20 December 2019. (70% of the final grade)
- Practical assignment for network analysis in R. Deadline for submission 15 November 2019. (30% of the final grade)

**Prerequisites**

Students should bring their own computer and have R and RStudio installed.

# Syllabus

**Day 1: Introduction to social network analysis**

Yang, S., Keller, F. and Zheng, L. (2017). *Social Network Analysis: Methods and Examples.* London: Sage, chapters 1-2, pp. 2-53.

**Day 2: Modelling of social networks**

Krackhardt, D. (1988). Predicting with networks: Nonparametric multiple regression analysis of dyadic data. *Social Networks*, 10(4), pp. 359-381.

**Day 3: Exponential random graph models**

Lusher, D., Koskinen, J. and Robins, G. (2013). *Exponential random graph models for social networks. Theory, methods, and applications*. Cambridge: Cambridge University Press, chapters 2-5, pp. 9-48.

Robins, G. and Lusher, D. (2007). An introduction to exponential random graph ($p^*$) models for social networks. *Social Networks*, 29(2), pp. 173-191.

**Day 4: Stochastic actor-oriented models**

Snijders, T., van de Bunt, G. and Steglich, C. (2010). Introduction to stochastic actor-based models for network dynamics. *Social Networks*, 32(1), pp. 44-60.

**Day 5: Advanced stochastic actor-oriented models**

Steglich, C., Snijders, T. and Pearson, M. (2010). Dynamic networks and behavior: Separating selection from influence. *Sociological Methodology*, 40, pp. 329-393.