



UNIVERSITÀ  
DEGLI STUDI  
FIRENZE

**DiSIA**

DIPARTIMENTO DI STATISTICA,  
INFORMATICA, APPLICAZIONI  
"GIUSEPPE PARENTI"

**PhD 'Development Economics and Local Systems' - DELOS**  
Curriculum in Economics of Local Systems

**STATISTICAL ANALYSIS OF NETWORK DATA**

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**20 May 2019, 14:30 – 18:30**

**21 May 2019, 9:30 – 16:00**

**Room 32, 2nd floor**

Network analysis has attracted considerable interest from the social, behavioural and other research communities in recent decades. This interest can be attributed to the importance and need to analyse relations among units, to detect any underlying structural patterns, and to infer implications of these relationships.

The relationships linking units may be of many sorts: economic, political, interactional or affective to name just a few.

Conventional data focuses on units or actors and their attributes, network data focus on actors and relations. Relational data can be represented as a network, or mathematical graph, consisting of a set of nodes and a set of edges.

Statistical models (for the probability of a tie) applied in social network analysis are typically non-standard because the common assumption of independent observations does not hold: the multiple ties to and from the same node (actor) are related. Moreover, the popular assumption of continuous normally distributed variables does not hold when tie variables are binary, nominal, ordinal, or count variables.

This short course provides an overview of (social) network modelling, with some applications. In particular, the main modelling approaches for networks observed in cross-section or longitudinal studies will be considered.

The course will also provide practical applications through statistical software (the \statnet" open-source suite -<http://statnet.org>- and the RSiena package - [www.stats.ox.ac.uk/snijders/siena/](http://www.stats.ox.ac.uk/snijders/siena/)).

As there are no computers available in the workshop room, all participants are requested to bring their own laptop with R and the packages statnet, igraph and RSiena installed.

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