Social Network Analysis (31484)

Edition 2012-2013

Professor: Mario Diani (mario.diani@upf.edu)

Office: 20.123 (Jaume I Building)

Language: English

Credits ECTS: 5

Term: 1st term (September-November). Tuesday & Thursday 18-20 h

Subject teaching plan

1. Introduction

Social Network Analysis is an optional course that aims to provide an introduction to the main concepts and techniques for the systematic exploration of social networks. The class starts with a discussion of the basic principles of the network analytic approach and with an introduction to network data. It then looks at network measures at the level of individual nodes and whole networks, to conclude with more novel topics such as the analysis of 2-mode data and hypotheses testing. The teaching approach avoids complex mathematical formalizations to focus on the logic that lies behind the techniques, and on substantive interpretations of the findings. The lectures combine a theoretical presentation of each subject with practical applications in the lab, using specific software such as UCINET or Pajek.

2. Prerequisites

Elementary mathematical competences, in particular some familiarity with matrix algebra; familiarity with basic statistics for the social sciences up to least squares regression.

3. Competences to be achieved in the subject

- General competences (Instrumental, Interpersonal and Systemic)

  Instrumental Competences
  - Ability to analyse and synthesise
  - Planning and management of time
  - Basic computer competence and ability of using statistical software like UCINET and Pajek.
  - Information management abilities (ability to search and analyse information coming from a variety of sources)
Interpersonal Competences
Critical and self-critical ability
Team work
Ability to work in a interdisciplinary team
Ability to communicate with people that are not experts in the subject

Systemic Competences
Research abilities
Ability to work autonomously
Ability to generate new ideas (creativity)
Design and management of projects

• Specific competences
  a. Knowledge of basic principles of data construction and visualization
  b. Knowledge of basic measures of the position of individual nodes within a network
  c. Knowledge of basic techniques for the analysis of whole networks
  d. Interpretation skills, as crystallized into the ability to describe results from basic
     network analyses
  e. Capacity to formulate and test basic hypotheses on network structure and its
     determinants

4. Assessment

• Assessment will be based on the 0-100 scale
  ✓ 0-50 – Fail
  ✓ 51-60 – Pass
  ✓ 61-70 – Good
  ✓ 71 to high – Outstanding
• 2 take-home tests at weeks 3 (due on week 5) and 7 (due a week after classes end),
  with an emphasis on problem solving and interpretations of results using real data.
  Each will count 25% of the final mark.
• 1 final in-class test combining true-false and multiple-choice questions with short
  problems worth 50% of the final mark

5. Contents

• There will be four content blocks.

  1. Network analysis: Basic concepts and tools
     The origins of network approaches: the Manchester anthropological school and the
     Harvard school. Relational vs. variable based analysis. One mode and two mode
2. **Measures for individual nodes**

3. **Measures for whole networks**

4. **Advanced topics**
   The analysis of 2-mode data: centrality and cohesion measures for 2-mode data. Network change over time. Testing hypotheses: QAP regression; autocorrelation procedures; tests for homophily.

6. **Methodology**
   With the exception of the first week, in which there will be only one introductory lecture, each week will consist of two 2-hour sessions. In the first session, the main conceptual aspects of the week topics will be laid out; in the second, to take place in the computer lab, students will practice their newly acquired knowledge with the help of specific software.

7. **Sources of information and didactic resources**
   - **Basic bibliography**
   - **Additional bibliography**
     Borgatti, Jones and Everett. 1998. Network measures of social capital. *Connections* 21(2) [html]
     Burt, Ronald. ND. The social structure of social capital. PDF.


# Class schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Bibliography (compulsory readings in bold)</th>
</tr>
</thead>
</table>
| 1 (Tuesday 25/09 & Thursday 27/09; 18-20) | **Introduction – Basic network concepts** + Laboratory | Scott (2000, chs.1-2)  
Kadushin (2004)  
Wellman (1988), ch.1  
Knoke (1990, ch.1)  
Degene and Forsé (1999, pp.1-12) |
| 2 (Tuesday 2/10 & Thursday 4/10; 18-20) | **Network data: Types, collection and management** + Laboratory | Hanneman and Riddle (2005, chs. 1, 3-6)  
Scott (2000, chs.3-4)  
Burt (2009)  
Marsden (1990)  
Borgatti and Molina (2005) |
| 3 (Tuesday 9/10 & Thursday 11/10; 18-20) | Centrality + Laboratory | Freeman (1979)  
Hanneman and Riddle (2005, Ch.10)  
Scott (2000, ch.5)  
Diani (2003) |
| 4 (no classes) | Students’ independent work on assignment I (due by 23/10) | |
| 5 (Tuesday 23/10 & Thursday 25/10; 18-20) | **Ego-networks** + Laboratory | Lubbers, Molina, and McCarty (2007)  
Hanneman and Riddle (2005, Ch.9)  
Burt, R. nd.  
Borgatti, Jones and Everett (1998)  
Fernandez and Gould (1994)  
Molina (2005) |
| 6 (Tuesday 30/10; 18-20) | **Cohesion** | Scott (2000, ch.6)  
Hanneman and Riddle (2005, Ch.11)  
Scott (2000, ch.6)  
Gould (1991)  
Granovetter (1973)  
Krackhardt (1999)  
Wasserman and Faust (1994, ch.7) |
| 7 (Tuesday 6/11 & Thursday 8/11; 18-20) | **Equivalence** + Laboratory | White, Boorman, and Breiger (1976)  
Hanneman and Riddle (2005, Chs.12-13)  
Scott (2000, chs.7-8)  
Burt (1976)  
Burt (1978)  
Burt (1987)  
Cinalli and Füglister (2008) |
<table>
<thead>
<tr>
<th></th>
<th>Students’ independent work on assignment II (due by 27/11)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 (no classes)</td>
<td></td>
</tr>
</tbody>
</table>
| 9 (Tuesday 20/11 & Thursday 22/11; 18-20) | Network analysis: 2-mode data + Laboratory  
Breiger (1974)  
Hanneman and Riddle (2005, Ch.17)  
Borgatti and Everett (1997)  
Diani (2009) |
| 10 (Tuesday 27/11 & Thursday 29/11; 18-20) | Hypotheses testing + Laboratory  
Hanneman and Riddle (2005, Ch.18)  
Diani and Bison (2004)  
Diani and Pilati (2011) |