BUSINESS SCHOOL

Course Study Guide
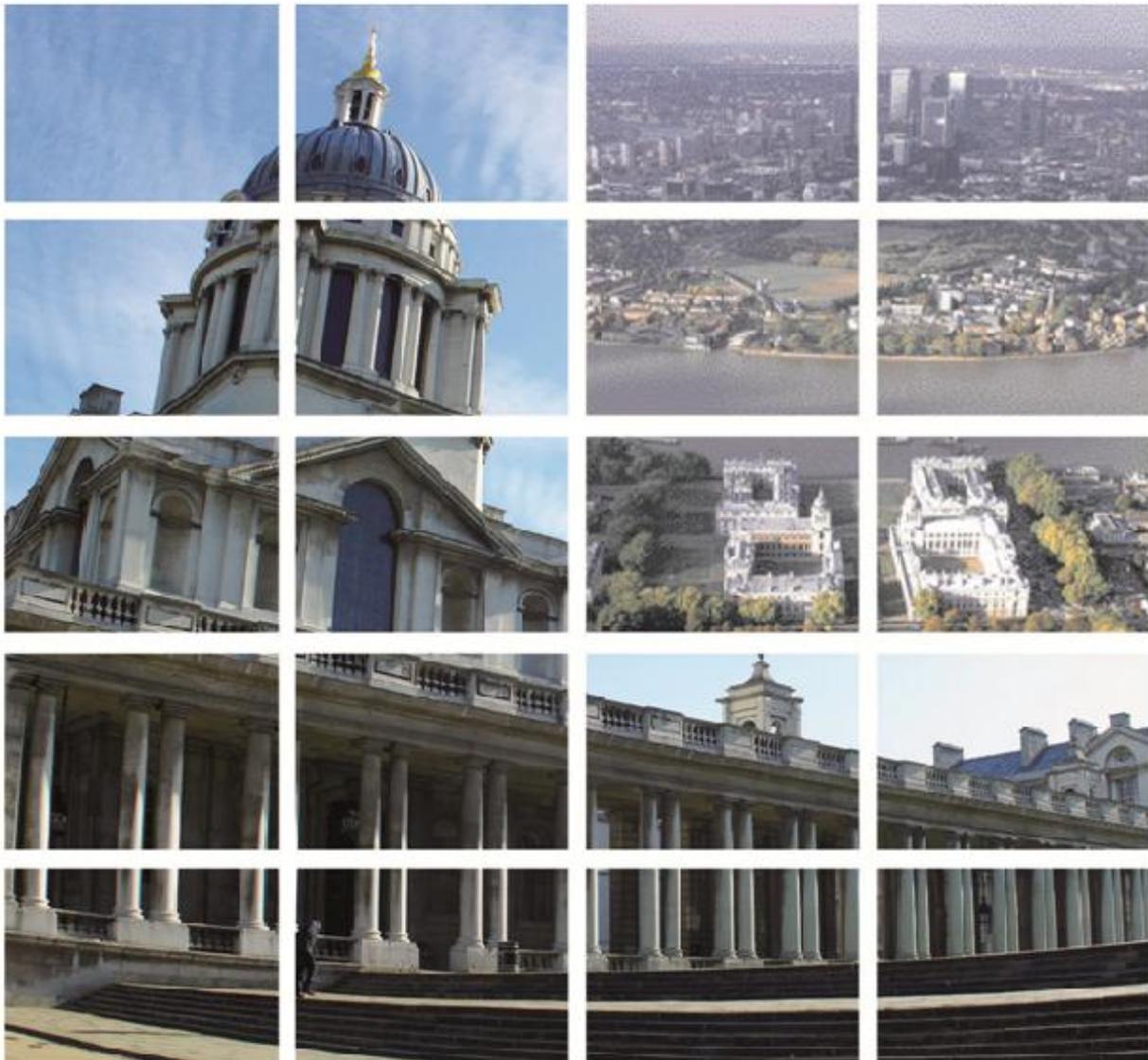
2013

Centre for Business Network Analysis Summer School

Doing Research with SNA: Tools, Theories, and Applications

Part I

Contents

1. Welcome

Dear Students,

Welcome to course *Doing Research with SNA: Tools, Theories, and Applications.*

This course is aimed at those researchers and post-graduate students who are new to the field of Social Network Analysis (SNA), and would like to better understand whether and how they can use it to enhance their research programmes. All social science and other backgrounds are welcome, and participants are assumed not to have any previous knowledge of SNA, or of any analytical or statistical software.

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2. Introduction to the Course

2.1 Aims

The aims of the *Doing Research with SNA: Tools, Theories, and Applications and Innovation* course are to provide attendees with a general overview of the field of social network analysis, and insight into how it can be used in scholarly practice in the social, economic, managerial and political disciplines. Specifically, Part I gives participants confidence in using key SNA concepts, tools and techniques in practice.

2.2 Learning Outcomes

On completing this course successfully you will have learnt:

- Fundamental principles of social network analysis and their grounding in social theories;
- Use of network-based reasoning to draw conclusions on society as well as policy and business recommendations;
- Design of data collection approaches for network data;
- Awareness of opportunities and challenges arising from the increasing availability of social network data from the Internet;
- Use of visualisation tools and how they can support network data collection, analysis and presentation;
- Measures of network composition and structure – how they can be used to uncover important aspects of the social phenomenon under study and how they can be represented graphically;
- Awareness of more complex statistical models of networks.

2.3 Learning and teaching activities

- Lectures, where the main theories will be discussed and presented.
- Tutorials will provide attendees with knowledge of the key principles, approaches and achievements of social network analysis; and experience in the use of network analysis and data visualisation tools, techniques, and software.

3.   Contact Details

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4.   Course Content and Design

Part I of the course includes Lectures and Tutorials (1.5 hrs/day each, for a total of 7 days).

In turn, the lectures include two parts: Theory and Data and Methods.

Theory introduces fundamental principles of SNA: their grounding in social theories, and their potential applications, ranging from the study of online networking and the Internet to more traditional forms of social interactions such as those occurring in the family, school, workplace or business environment. Participants are shown how the network perspective places emphasis on inter-individual relationships rather than individual attributes, thereby requiring a major change of mindset relative to standard social science approaches. The theory part also includes presentation of key applications of SNA, to show how a network perspective has illuminated aspects of society that could not be easily understood otherwise. All theoretical presentations are accompanied by examples and case studies.

The more technical Data and Methods covers type, structure and format of network data: data collection methods: metrics and measures of network structure; and an introduction to statistical tools and models for network data.

In the Tutorials, attendees will learn how to apply the notions learned in the Data and Methods parts of the lectures to training datasets. Software to be used includes primarily UCINET with Netdraw (available for free for 90 days, after which the software needs to be purchased): https://sites.google.com/site/ucinetsoftware/downloads. Occasionally, some work may be done with Gephi, a free software for social network exploratory analysis and visualisation (freely available at http://gephi.org/) and NetLogo, a free software for agent-based computer simulation (available at: http://ccl.northwestern.edu/netlogo/).

ACTIVITY:

Week beginning		Session Title and Description
17-June-13	Theory	What is SNA, and what it is used for; what is a network - introduction to graph theory
	Data and Methods	Data types: personal and whole networks; interpreting the size and structure of personal networks
	Exercises	Opening a network data file in UCINET, and visualising it in NetDraw
18-June-13	Theory	The network perspective
	Data and Methods	Data formats (node / edgelists and adjacency matrices; directed and undirected ties; binary and valued ties; one and two-mode networks); data collection (surveys thorough name generators and rosters, archives, Internet data mining); data visualisation (basic notions)
	Exercises	Writing data files; importing data files into UCINET; visualising networks with Netdraw; matching node attributes and tie data
19-June-13	Theory	Social capital and social networks
	Data and Methods	Some network metrics (density, connectivity, distance)
	Exercises	Calculating basic network metrics in UCINET (1)
20-June-13	Theory	Embeddedness and economic networks
	Data and Methods	Measures of embeddedness – reciprocity, transitivity, clustering
	Exercises	Calculating basic network metrics in UCINET (2)
21-June-13	Theory	Networks, power and status
	Data and Methods	Centrality measures; centralisation
	Exercises	Calculating centrality and centralisation measures in UCINET; visualising centrality in Netdraw
24-June-13	Theory	Online networks
	Data and Methods	Detecting communities
	Exercises	Identifying subgroups, cliques and clusters in UCINET; identifying subgroups, cliques and clusters in Gephi
25-June-13	Theory	Diffusion of behaviours and innovation through networks
	Data and Methods	Some statistical tools and models (basics); mixed qualitative/quantitative methods; resources for further progress
	Exercises	For further progress: discovering tools for statistical analysis in UCINET, Gephi, R

4.1   Suggested Reading

Every session will bring together contents from a combination of different sources. Specific information about the reading lists associated with each session will be provided in class.

However, the following can be used as general background readings for the course:

Reference
Christina Prell. Social Network Analysis: History, Theory and Methodology. London: SAGE, 2011
Thomas W. Valente. Social Networks and Health: Models, Methods and Applications. Oxford: Oxford University Press, 2010
Marina Hennig, Ulrik Brandes, Jürgen Pfeffer, Ines Mergel Studying Social Networks: A Guide to Empirical Research Campus-Verlag, 2012