ICPSR Summer Workshop
Introduction to Network Analysis: Study Design and Methods
Indiana University Bloomington
July 25-29, 2016
Instructors: Bernice Pescosolido and Ann McCranie

Logistics/Schedule
Location: Social Science Research Commons, Woodburn Hall 200

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>9 a.m. – 12 p.m.</td>
<td>Lecture and discussion</td>
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<tr>
<td>12 p.m. – 1:15 p.m.</td>
<td>Lunch break (on your own except Wednesday)</td>
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<tr>
<td>1:15 – 5 p.m.</td>
<td>Lecture, discussion, and lab work</td>
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Course Description

Social network analysis (SNA) focuses on relationships between social entities. It is used widely in the social and behavioral sciences. The social network perspective, which will be taught in this workshop, has been developed over the last seventy years by researchers in psychology, sociology, political science, and anthropology. New interest in this field by physics, information science, social media studies, and biomedical fields has spiked in the past 15 years - this approach is often referred to as “network science.” While this approach sometimes differs importantly in scale and substantive interest, it is often used to study the exact same problems as traditional SNA. This course will connect these two traditions in their terminology and specific methodological approaches.

This week-long workshop covers precisely those SNA concepts and tools, and has a special focus on how to design a network study and how to plan and execute data collection. It will present an introduction to various concepts, methods, and applications of social network analysis drawn from the social and behavioral sciences. The primary focus of these methods is the analysis of relational data measured on groups of social actors. Topics to be discussed include a basic introduction to SNA, graphs and matrices, basic network measures and visualization, reciprocity and transitivity, dyadic and triadic analysis, centrality, egocentric networks, two-mode networks (affiliations, bibliographic/scientometric analysis), cohesive subgroups, equivalences and blockmodeling, and a brief introduction to statistical modeling in network (ergm/p*/RSiena.)

Please note: The focus on statistical models (ergm/p*/Siena models) is limited and introductory in this course - those are the explicit focus of the other advanced courses in the ICPSR series. Also, this course focuses largely on “whole” or “complete” networks in which sociometric analysis is required. Egocentric analysis is not a primary focus of this course, but will be a topic of discussion and inclusion when appropriate with the rest of the course. There is also a separate course that focuses on egocentric analysis.
Software and labs: Software packages introduced in lab materials include UCINET, Pajek, statnet/ergm for R, visone, Sci2. Labs will be spread throughout the afternoon sessions and will selectively cover topics of interest to the class.

Readings
There are two required text books for the course, and there will also be some additional articles (which will be provided) that we will ask you to read. There is a lot of reading; don’t panic. Simply try to become familiar with key terms and concepts – and read more in depth when you face issues in your own research.

Required Books (Can be purchased through Amazon.com or other online book sellers.)


Recommended Books


Scott, John and Carrington, Peter. 2011. *The SAGE Handbook of Social Network Analysis*. SAGE Publications. (About $160 – check your library, some have this as an online resource)

Schedule of Classes

Monday, July 25

Seminar: *Networks: Terminology, Basic Principles, Types of Network Studies, and Basic Design Issues*

*This day will be devoted to introductions – the underlying ideas of network theory, the kinds of data that are used, how network data are gathered, and matrix formats and notation.*

Review/skim before Monday’s class:
— Borgatti, Everett and Johnson: Chap 1, 2
— Robins: Chap 1, 2

You may also be interested in:

**Tuesday, July 26**

**Seminar: Network History & the History of Networks**

*This day will focus on the 30's and the innovations in standardized terminology, the use of the sociomatrix, etc. We will also look at the theoretical and methodological advances in network theory that occurred in the early and mid-1970s. We will work through one specific theoretical problem (Network Episode Model) and how this plays out historically.*

**Lab: Introduction, basic measures, centrality**

Review/skim before Tuesday’s class:


You may also be interested in:

— Annual Reviews eBook (online)


Wednesday, July 27

Seminar: Design Issues in Network Science

Today we will discuss matters of research design, data collection and data management.

Lab: Visualization, Pajek

Lunch will be provided to the class today for more informal group conversation. Let Ann know if fast casual Mexican cuisine (Chipotle) is an issue for you.

Review/Skim before Wednesday’s Class:
— Borgatti, Everett and Johnson: Chap 3, 4, 5
— Robins: Chap 3, 4, 5, 6

You may also be interested in:

Thursday, July 28

Seminar: Enter Network Science and Transdisciplinarity: The Network Wars

Thursday seminar time will focus on the “network wars” and the new and old contributions of the modern era of networks.

Lab: Subgroups, Blockmodeling

Review before Thursday’s class:

You may also be interested in:

Friday, July 29

Seminar: Where to Next? Dynamics, Multiple Levels, and Specificity, Large and Small

The final day will examine more recent concerns in network theory and analysis (e.g., dynamics) and the methodological issues and tools required and currently available to deal with issues of change in networks.

Lab: statnet in R

Review/skim before Friday’s class:
— Borgatti, Everett and Johnson: Chap 6, 8
— Robins: Chapter 6, 7, 10

You may also be interested in: