Network Analysis: An Introduction  
(Five day workshop)  
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Course Description  
Social network analysis focuses on relationships between social entities. It is used widely in the social and 
behavioral sciences, as well as in political science, economics, organizational science, and industrial 
engineering. The social network perspective, which will be taught in this workshop, has been developed 
over the last sixty years by researchers in psychology, sociology, and anthropology. The social network 
paradigm is gaining recognition and standing in the general social and behavioral science communities as 
the theoretical basis for examining social structures. This basis has been clearly defined by many 
theorists, and the paradigm convincingly applied to important substantive problems. However, the 
paradigm requires a new and different set of concepts and analytic tools, beyond those provided by 
standard quantitative (particularly, statistical) methods.

This workshop, which has been taught in this format since the mid-1980’s, focuses on precisely those 
concepts and tools. This five day workshop 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 an introduction to graph theory and the use of directed graphs to study structural 
thories of actor interrelations; structural and locational properties of actors, such as centrality, prestige, 
and prominence; subgroups and cliques; equivalence of actors, including structural equivalence, 
blockmodels, and an introduction to role algebras; an introduction to local analyses, including dyadic and 
triad analysis; and statistical global analyses, using models such as p1, p*, and their relatives. Brief 
introductions will be given to common networks software packages: Ucinet, Pajek, STOCNET, and pnet. 
This is a workshop designed for people more interested in learning methodology than theory (we sort of 
assume that you already have some knowledge of network theory). It assumes a familiarity with matrix 
algebra and statistics.

Schedule  
The workshop will meet for about seven hours each day with a 75 minute break for lunch at 
University of Michigan, according to the following schedule:

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>Morning</td>
<td>Lecture (McCranie and Wasserman)</td>
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<tr>
<td>Early afternoon</td>
<td>Computing and Data Analysis (Miller and McCranie)</td>
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<tr>
<td>Late afternoon</td>
<td>Questions and Discussion</td>
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On Thursday evening we will organize an outing to a local pub for socializing. And usually, ICPSR 
holds a reception for us on Monday afternoon after class.
If you would like to schedule time to talk to the instructors about your own data or projects, please talk to us early in the week.

**Course texts**

There are two particularly helpful texts for this class. The Wasserman & Faust text will be primary.


Additionally, you may find the following texts helpful:


**Topics to be taught** from Wasserman and Faust include:

Chapter 1: Introduction  
Chapter 2: Social Network Data: Collection and Applications  
Chapter 3: Notation for Social Network Data  
Chapter 4: Graphs and Matrices  
Chapter 5: Centrality, Prestige, Prominence, and Related Concepts  
Chapter 7: Cohesive Subgroups  
Chapter 9: Structural Equivalence  
Chapter 10: Blockmodels  
Chapter 13: Dyads  
Chapter 15: Statistical Analysis of Single Relational Networks

These chapters will be augmented with readings from Carrington, Scott, and Wasserman, especially Chapters 8-10.

**Please review chapters 1-4 and before you arrive in Ann Arbor.** We will zip through this intro/beginning material, and it would be good if you had a headstart.

**Computer Programs**

We will be using a number of different social network analysis computer programs. All of these are available in the computer labs. All but UCINET are freely available on the web.

- UCINET, available in computer labs and for purchase from Analytic Technologies:  
  [http://www.analytictech.com](http://www.analytictech.com)
• Pajek: http://pajek.imfm.si/doku.php?id=download
• Netdraw, comes with the UCINET package or individually at: http://www.analytictech.com
• STOCNET: http://stat.gamma.rug.nl/stocnet/ (see also http://stat.gamma.rug.nl/snijders/siena.html)
• Network Workbench: http://nwb.slis.indiana.edu/download.html

Other Resources
These are some particularly useful resources on social networks available online.
The International Network for Social Network Analysis (INSNA) is the international and interdisciplinary professional association for people interested in social network research. Its website (http://insna.org) is a wonderful source of information and resources on social networks, including links to many informative sites and to social network computer programs and data.

The listserv, SOCNET, is the main on-line forum for discussion of current topics on social networks. Information on how to join is available through the INSNA site (see above) or at: http://www.insna.org/pubs/socnet.html

Connections is INSNA’s newsletter/informal journal. It is available through the INSNA website or directly at: http://www.insna.org/pubs/connections/index.html

Journal of Social Structure is a peer-reviews online journal with many articles of interest to social network researchers. http://www.cmu.edu/joss/

Complexity and Social Networks Blog (http://www.iq.harvard.edu/blog/netgov/) is a new “on-line journal” devoted to network analysis.

Steve Borgatti’s web page is a nice source of introductory material and handouts on various topics on social networks, http://www.analytictech.com/networks/

Data examples from Wasserman and Faust are available at the INSNA website.