

**WORKSHOP SYLLABUS**  
**POLI 279: Special Topics in Methodology: Social Networks**  
Fall 2009  
Wednesday 3:00pm – 5:50pm, Social Sciences Building 104  
Prof. James Fowler, SSB 383 and Atkinson 6115  
[jhfowler@ucsd.edu](mailto:jhfowler@ucsd.edu), <http://jhfowler.ucsd.edu>  
Office Hours: by appointment

**Course description**

This workshop is designed to give students an opportunity to publish a paper using network methodology. The course provides a brief introduction to social networks concepts and then focuses on the projects students are working on. By the end of the course, each student team will have produced a core set of results that will form the basis of an article to be submitted for publication.

The format of this workshop is social. Science is a *social* activity, so there will be a very large emphasis on working with, soliciting feedback from, and providing feedback to your peers. *All papers must be coauthored.*

**Data**

The most important thing you must do, and quickly, is to decide on a data source for your project. This will help you figure out who to work with. You are more than welcome to use your own data, but here are some existing sources you may decide to use:

*Judicial Citations* – <http://jhfowler.ucsd.edu/judicial.htm>

*Cosponsorships*– <http://jhfowler.ucsd.edu/cosponsorship.htm>

*Roll Call Affiliations* - <http://www.voteview.com/>

*Legislative Committee Assignments* - [http://web.mit.edu/17.251/www/data\\_page.html](http://web.mit.edu/17.251/www/data_page.html)

*Campaign Contributions* - [http://www.fec.gov/finance/disclosure/ftp\\_download.shtml](http://www.fec.gov/finance/disclosure/ftp_download.shtml)

*IR Data / Correlates of War* - <http://www.correlatesofwar.org/>

*Add Health* - <http://www.cpc.unc.edu/addhealth> (You must get permission from Add Health before you use this data – tell me ASAP if you intend to use it)

Other possibilities include academic citations, placements in political science, and students on Facebook (ask me if you are interested in these)

**Tools**

The next important thing is to get your data into a package for analysis and visualization.

For analysis I use R: <http://cran.r-project.org/>

Here's a nice tutorial on the igraph package in R: <http://cneurocv.s.rmk.kfki.hu/igraph/NIPS08.html>

For visualization I use Pajek: <http://pajek.imfm.si/doku.php> which exports to beautiful 3-D .svg images that can be manipulated in Inkscape: <http://www.inkscape.org/>

For network movies I use SoNIA: <http://www.stanford.edu/group/sonia/>

A nice R package that implements exponential random graph models (ERGM) is <http://statnet.org> with a tutorial here: <http://www.nips2008.statnet.org/>

If you have dynamic data on a small network (~100 nodes) then SIENA is the state-of-the-art for distinguishing selection effects from influence effects: <http://stat.gamma.rug.nl/siena.html> and a nice tutorial is here: <http://www.gmw.rug.nl/~steglich/workshops/NIPS2008.html>

For smaller networks you might also try UCINET <http://www.analytictech.com/ucinet/ucinet.htm> or VISONE: <http://visone.info/>

## Requirements

Your grade for this course will depend on class participation and your final paper.

- 1. Wiki Participation.** Please actively participate in updating the web site for the class. Each person is required to add at least 10 new citations with working external links that are relevant for the class projects or the general reading list.
- 2. Peer Feedback.** You are required to post weekly feedback on other projects in the class. By the end of the quarter you must have given feedback on at least three projects besides your own.
- 3. First Group Presentation.** Your research group will be required to present your topic to the class. You should assign 3 readings for your topic (posted on the wiki), including at least one “classic” paper that has not yet been covered in the class, one review article relevant to your topic, and the published paper that comes closest to the one you intend to write. You will also be required to demonstrate the use of a tool for network analysis and/or visualization (the demonstration must not significantly overlap with prior presentations).
- 4. Class Participation.** Ask questions! Ask questions of me and ask questions of your fellow classmates. Did I mention you should ask questions?
- 5. Final Group Presentation.** On the last day, each group will get about 10-15 minutes to present their results and answer questions.
- 6. Final Group Paper.** This paper should describe the data, methods, and results of your network analysis. It will help if you also provide at least 1-2 pages of context (briefly sketch the topic, main literature, importance of your question) but my main interest is in your analysis and results.
- 7. Peer evaluation.** At the end of the workshop you will be asked to evaluate the contributions of fellow group members and the feedback you received from other classmates, and you will be graded based on their evaluation of your feedback. These evaluations are private and will only be seen by me.

## Policies

I will not grant permission to add requests (PTAs) – we are already full and I plan to teach the course next year.

I will only give incompletes for compelling, unanticipated, and nonacademic reasons. Late assignments will be marked down the equivalent of a full letter grade for each 24 hour period *in which* they are late (one hour late = -1 letter, 25 hours late = -2 letters, and so on). I will only make an exception to this policy if 1) you contact me in writing a week in advance to discuss a conflict, or 2) you provide documentation of a severe illness or family emergency that prevented you from completing the assignment on time.

I reserve the right to check a digital form of any of your written work with software designed to check for plagiarism. I will prosecute all cases of detected plagiarism to the fullest extent of University policy (see UCSD's Academic Integrity policy: <http://www-senate.ucsd.edu/manual/appendices/app2.htm>).

### **Tentative Schedule**

Oct 7 Introduction: Meet, greet, and brainstorm.  
Data introduction  
Tools introduction  
Framingham Heart Study Results

Oct 14 Network Theory  
Voter Networks  
Judicial Citations  
Cosponsorship Networks

Oct 21 Models of Networks  
Genes and Networks

Oct 28 Student presentations

Nov 4 Student presentations

*No class Nov 11*

Nov 18 Student presentations

*No class Nov 25*

Dec 2 All groups present initial results

Dec 9 (No class) *email me a copy of your final results by Noon.*

Dec 16 (No class) *Deadline by which I will email you my thoughts.*

Jan-Feb Finish up full draft of paper and solicit feedback

Mar-Apr Submit!

### **Good Reviews**

Costa LD, Rodrigues FA, Travieso G, et al. Characterization of complex networks: A survey of measurements ADVANCES IN PHYSICS Volume: 56 Issue: 1 Pages: 167-242  
Published: 2007

Boccaletti S, Latora V, Moreno Y, et al. Complex networks: Structure and dynamics  
PHYSICS REPORTS-REVIEW SECTION OF PHYSICS LETTERS Volume: 424 Issue: 4-5  
Pages: 175-308 Published: FEB 2006

Newman MEJ The structure and function of complex networks SIAM REVIEW Volume: 45  
Issue: 2 Pages: 167-256 Published: JUN 2003

Albert R, Barabasi AL Statistical mechanics of complex networks REVIEWS OF MODERN  
PHYSICS Volume: 74 Issue: 1 Pages: 47-97 Published: JAN 2002

Szabo G, Fath G Evolutionary games on graphs PHYSICS REPORTS-REVIEW SECTION OF  
PHYSICS LETTERS Volume: 446 Issue: 4-6 Pages: 97-216 Published: JUL 2007

McPherson M, Smith-Lovin L, Cook JM Birds of a feather: Homophily in social networks  
ANNUAL REVIEW OF SOCIOLOGY Volume: 27 Pages: 415-444 Published: 2001

## **Websites with Good Sources of References**

Albert-László Barabási - <http://www.nd.edu/~alb/>

Mark Handcock - <http://www.stat.washington.edu/handcock/>

Matthew Jackson - <http://www.stanford.edu/~jacksonm/>

Jon Kleinberg - <http://www.cs.cornell.edu/home/kleinber/>

Mark Newman - <http://www-personal.umich.edu/~mejn/>

Tom Snijders - <http://stat.gamma.rug.nl/snijders/>

Duncan Watts - <http://www.sociology.columbia.edu/fac-bios/watts/faculty.html>

## **2008 and 2009 Networks in Political Science Conferences**

[http://www.hks.harvard.edu/netgov/html/colloquia\\_NIPS.htm](http://www.hks.harvard.edu/netgov/html/colloquia_NIPS.htm)

[http://www.hks.harvard.edu/netgov/html/colloquia\\_HPNC2009.htm](http://www.hks.harvard.edu/netgov/html/colloquia_HPNC2009.htm)