
POLI:7002:0001 Network Analysis

Weds 1:30-4:20 pm

30 Schaeffer Hall

Spring 2018

Course Information

Instructor: Dr. Menninga

Office: 308 Schaeffer Hall

Office Hours: Tue & Wed 9:00–10:30am, or by appointment

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Teaching Assistant

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Office Hours: Tue 2:30–5:30pm, or by appointment

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Course Description

At its heart, network analysis is a framework for thinking about the interconnectedness of the world (in our case, the social and political world). The approach tends to treat relationships between individual actors as the basic unit of analysis, with dyads (pairs of actors) and higher-order units (triads, clusters, and other composite structures) replacing the isolated individual as the primary object of study.

This course is a comprehensive introduction to analyzing network data. We will cover network data collection and management, the formulation and expression of network theory, network visualization and description, and models for the statistical analysis of networks. The course will integrate theoretical discussions with practical examples.

Class meetings will typically have the following components: (1) lecture on the main technical points of the weekly reading (often statistical/mathematical), and (2) computational demonstration using software such as UCINET, NetDraw, and the statnet package in R. Initial readings are listed in the schedule below, although additional articles may be added. When working with statistical software in class, I strongly encourage you to bring your laptops so you can write (and annotate) your own code.

Prerequisites

While there are no formal requirements, students should feel comfortable learning mathematical statistics. It is assumed that students have a background in linear and generalized linear models.

Course Materials

In this course, we will use a variety of in-print and on-line resources. The following two books are required:

- Prell, Christina. 2012. *Social Network Analysis: History, Theory & Methodology*. Thousand Oaks, CA: Sage Publications, Ltd. (Hereafter: Prell)
- Lusher, Dean, Johan Koskinen, and Garry Robins, Eds. 2013. *Exponential Random Graph Models for Social Networks: Theory, Methods, and Applications*. New York: Cambridge University Press. (Hereafter: ERGM)

Any other readings assigned will be available through the UIowa library or on the class ICON site.

Software

We will be using R in this course as we learn how to implement/interpret different analyses. R is a free, open-source program. Instructions for downloading and setting up R are available on the course website. Additionally, some resources and tutorials are posted to help you get started if you're not already comfortable with R.

Jielu's office hours are for you! This is the only class she's assisting for, so take advantage of her office hours to ask questions about R, fix code, clarify the homework, etc. Learning R includes quite a bit of a learning curve but can be very rewarding when you start feel like you master it.

Course Requirements and Grading

Your grade for the course will be determined by performance in four areas: class participation, problem sets, an article critique, and a final paper/poster presentation. Homework and papers are due at the time specified. Any late assignments will have points deducted at the rate of 10% of the total available points per calendar day unless arrangements are made *prior* to the due date.

Course Grade Breakdown:

- Participation: 10%
- Problem Sets: 30%
- Article Critique: 10%
- Paper & Poster: 50%

Participation:

Everyone is expected to keep up with the course material and actively engage in class. You cannot participate if you are not present. Therefore attendance is expected. Please contact me as soon as possible if you must be absent. Evaluation of your participation will be based on: evidence that you are well-prepared for class; intelligent, respectful contributions to discussion, especially questions and comments that advance the conversation; asking relevant questions during lecture/software demonstrations; actively participating in software demonstrations; and engaging your colleagues during their final presentations by asking thoughtful (constructive) questions.

Problem Sets:

There will be a few assignments throughout the semester (~4). These problem sets will focus on executing topics discussed in class. Often they will require a computing component as well as discussion or interpretation. These assignments will typically be due two weeks after they are posted to ICON. You are welcome to work together on these assignments, but you are each expected to write up and turn in your own answers.

All assignments should be uploaded to ICON by the due date. I strongly prefer you type your assignments. If you dislike using Word to write math equations and create tables, I recommend using .

Answer keys will be posted when an assignment is returned. Once the answer key is posted, late homework will no longer be accepted.

Article Critique:

For each class in which substantive articles are listed on the syllabus, at least one student will be responsible for writing a critique. Students will sign up on the first day of class and the schedule will be posted to ICON. The critique should consider both the strengths and weaknesses of the article(s) in question. What works? What doesn't? What would you like to see changed? Be sure to address the role of networks in the articles(s). This role can be theoretical,

substantive, or methodological (or often all three). The critiques should be 2-4 pages (longer is not necessarily better). The purpose is to get you engaging with networks literatures and thinking critically about the use of networks in social science settings. My articles are just suggestions. You are welcome to suggest different articles. If you would like to discuss different articles, you must get them approved by me first. They must be on the topic of the day, but can be from any social science field. If I like the articles you found more than the ones on the syllabus, extra credit points will be awarded! (Encouraging you to find good articles helps me diversify/update my syllabus as well).

Paper/Poster Presentation:

Write a paper and make sure it includes networks. The best papers will be ready to present at a conference or (ideally) publish. The paper should be no more than 25 pages (not including Appendices if you have convergence tests or other diagnostics you need to report). All papers are expected to be formatted professionally (please double-space). The focus of the paper can be substantive (using techniques we learned in class to address an unanswered question in your field), methodological (developing a new network technique), or anything in between.

During exam week you will give a conference-style poster presentation. Your poster should be uploaded to ICON at least 2 hours before your poster session. Additional advice on the paper and poster presentation is posted on ICON.

You are strongly encouraged to help each other with the papers and posters, talk over ideas, and edit for each other. You are expected to turn in a paper that represents solo-authored original research unless given explicit permission otherwise.

Mid-Semester Paper Deadlines:

Throughout the semester, there are some intermediate deadlines for the paper. The main purpose of these are to keep you moving forward with the project while providing opportunities for feedback before the paper is finished.

Paper Topic & Initial Bibliography: Upload to ICON a proposal for your paper by class on Feb 28. Describe the research question, the contribution you're making to the literature, and how network analysis will enhance the project (this should be no longer than 3 pages). Attach an initial bibliography of at least 10 sources with 1 or 2 sentence summaries of how the source relates to your research question. Five of these sources should explicitly incorporate networks *if at all possible*. In addition to looking for sources within the specific substantive literature, also consider work in other literatures that use similar approaches to the one you intend to use. If you cannot find relevant networks sources, indicate where you looked/what literatures you looked at. This proposal will count for 5% of your final paper/presentation grade.

Data Selection & Research Design: Upload to ICON a brief description of the data you will use to explore your research question as well as the type of analyses you intend to run on the data by class by March 21. This description should be 2-3 pages (incorporate brief descriptions of how you will operationalize the main concepts, whether the data is already in network form or will require restructuring, etc). If you have updated or modified your topic since the last deadline, you should briefly include a description of the new topic and contribution as well (in this case you can run longer than 3 pages). This assignment will be 5% of your final paper/presentation grade.

Paper Workshop: On April 18, we will have a paper workshop. Details on the workshop design will be announced as the date nears; for now know that a draft of your paper will be due on April 11. You will provide/receive written comments to/from a few of your colleagues. The draft itself will only be graded in terms of completion, take advantage of this opportunity to incorporate good feedback. The quality of the comments you provide your peers will also count for 5% of your final paper/presentation grade. Failure to submit a draft will result in your inability to participate in the workshop (and, therefore, a grade of 0 for both your draft and your comments).

Important Dates

- Critique: Varies by student. See schedule on ICON.

- Proposal: Feb. 28
- Data & Research Design: March 21
- Paper Draft: April 11
- Paper Due: Monday, May 7
- Poster: TBA

Other Expectations

Technology: Please turn your mobile phones off or to silent mode before class. Laptops are permitted for class purposes only. If you are using your laptops for notes or readings, sign out of everything else so you can focus on mastering the material at hand.

Email: Email is a useful way to ask quick questions. However, replying to complicated questions is highly inefficient for both you and me. If you want to talk about something you don't understand, come by my office hours. In general, while I respond to student emails, I prefer to talk in person. Come see me during office hours!

Ask Questions! Often if you have a question one of your classmates does too. Relevant questions are strongly encouraged.

CLAS Teaching Policies & Resources Syllabus Insert 2017-2018

Administrative Home

The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall, or see the CLAS Academic Policies Handbook at <http://clas.uiowa.edu/students/handbook>.

Electronic Communication

University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences (Operations Manual, III.15.2, k.11).

Accommodations for Disabilities

The University of Iowa is committed to providing an educational experience that is accessible to all students. A student may request academic accommodations for a disability (which include but are not limited to mental health, attention, learning, vision, and physical or health-related conditions). A student seeking academic accommodations should first register with Student Disability Services and then meet with the course instructor privately in the instructor's office to make particular arrangements. Reasonable accommodations are established through an interactive process between the student, instructor, and SDS. See <http://sds.studentlife.uiowa.edu/> for more information.

Academic Honesty

All CLAS students or students taking classes offered by CLAS have, in essence, agreed to the College's Code of Academic Honesty: "I pledge to do my own academic work and to excel to the best of my abilities, upholding the IOWA Challenge. I promise not to lie about my academic work, to cheat, or to steal the words or ideas of others; nor will I help fellow students to violate the Code of Academic Honesty." Any student committing academic misconduct is reported to the College and placed on disciplinary probation or may be suspended or expelled (CLAS Academic Policies Handbook).

CLAS Final Examination Policies

The final examination schedule for each class is announced by the Registrar generally by the fifth week of classes. Final exams are offered only during the official final examination period. No exams of any kind are allowed during

the last week of classes. All students should plan on being at the UI through the final examination period. Once the Registrar has announced the date, time, and location of each final exam, the complete schedule will be published on the Registrar's web site and will be shared with instructors and students. It is the student's responsibility to know the date, time, and place of a final exam.

Making a Suggestion or a Complaint

Students with a suggestion or complaint should first visit with the instructor (and the course supervisor), and then with the departmental DEO. (Wenfang Tang, 335-2358) Complaints must be made within six months of the incident (CLAS Academic Policies Handbook).

Understanding Sexual Harassment

Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI Comprehensive Guide on Sexual Harassment for assistance, definitions, and the full University policy.

Reacting Safely to Severe Weather

In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the Department of Public Safety website.