Annenberg School of Communication  
University of Southern California

COMM 400: COMMUNICATION NETWORKS

Syllabus for COMM 400: Senior Seminar in Communication Networks  
Spring, 2013; Mondays, 2:00 – 4:50 p.m. in room ASC 223AB

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Course Description

Comm 400: Senior Seminar in Communication Networks, is a course designed to provide Annenberg seniors the opportunity to pursue in depth investigation of selected advanced topics. This semester one topic is communication networks. Students will review theory and research pertaining to network topics. These include criminal and terrorist networks, social support networks, online communities, organizational communication networks, global telecommunications networks, disease transmission networks, and interpersonal networks. Students will also be introduced to computer programs for computing communication networks, including UCINET, NetDraw, NodeXL and Gephi. Class will be conducted in lecture-discussion format centered on the course readings. Each week one or two students will be selected to lead the class discussion over the substantive (nontechnical) articles. Everyone will be expected to post to the class
discussion board their assessment of the readings and at least two questions that they would ask the authors if they had a chance to talk with them about their articles. Postings are due by 6:00pm on Sunday nights

**Texts**


**Software tools introduced in the course:**


**Take-Home Labs**

The course includes five take-home labs introducing network formats, analytical techniques, and software tools. Labs should be submitted by 2pm on Monday of the week when they are due. All labs must be completed correctly in order to receive a grade for the class. To correct a lab, please revise and resubmit it within a week of receiving your graded work.

- Lab 1: Network Formats - Due February 4
- Lab 2: Working with UCINET and NetDraw – Due March 4
- Lab 3: Working with NodeXL – Due April 8
- Lab 4: Network correlation and regression – Due April 15
- Lab 5: Working with Gephi – Due April 22
Evaluation

Grades in this course will be based entirely on a research paper. Students will examine a network topic of interest to them and prepare original analyses of their chosen areas. Students will work closely with the instructors to develop and elaborate their ideas. Students are encouraged to range widely in the focus of their papers. Students are expected to collect and analyze network data. The paper should contain four sections: (1) Statement of the problem and review of relevant theory and research literature, (2) A method section that describes how the research was conducted, (3) a results section that presents the findings of the study, and (4) a discussion section that explores the implications of the findings for network theory and research and applies them to potential uses in society. A research paper proposal is due on March 4. It should contain a description of the research question(s) or hypotheses you want to study and a brief summary of relevant research literature. You should explain how you will collect your data and what tools you will use to analyze the data. The proposal should contain a Reference list of at least a dozen articles or books you plan to cite in your final paper.

Schedule

January 14: Course Overview

- Getting acquainted
- Networks Everywhere…!
- Class Network Analysis
- Review of the syllabus

January 21: Martin Luther King Holiday: Enjoy!

January 28: Network concepts I & The Social Network Revolution


Hanneman and Riddle, Cp. 1

Take-home Lab 1: Network Formats – Due February 4
Note: For next week, please download and install the UCINET software.
February 4: Fundamental Network Concepts II, Intro to UCINET & Strength of Weak Ties


Hanneman and Riddle, Chs. 5 & 6.

*In-class Lab: Learning UCINET and NetDraw.*

February 11: Social Support Networks


*In-class Lab: Density, connectedness, reciprocity, and transitivity.*

February 18: President’s Day Holiday: Enjoy!

February 25: Social Capital


*Take-Home Lab 2: Distance, centrality, and centralization – Due March 4*
March 4: Contagion, Social Networks and Health


*In-class Lab: Clustering, cliques and subgroups.*

*Research Paper Proposal due*

March 11: Small World Networks


*In-class Lab: Affiliation networks*

March 18: Spring Break

March 25: Criminal and Terrorist Networks


*In-class Lab: Introduction to Qualtrics & CIKNOW*
April 1: Online Networks


Take-Home Lab 3: NodeXL and Online Social Networks – Due April 8

April 8: Social Support and Discussion Networks


Take-Home Lab 4: Network correlation and regression, QAP & MRQAP – Due April 15

April 15: The Evolution of Organizational and Community Networks

Monge & Contractor, Cp. 9, Evolutionary and Coevolutionary Theories


Take-Home Lab 5: Network visualization with Gephi – Due April 22

April 22: Project Day

April 29: Presentations

May 6: Course Project Due
Network Resources

Academic Organizations and Conferences

- Organizational Behavior Division, Organizational Communication and Information Systems Division, Academy of Management (AoM). [http://www.aom.pace.edu](http://www.aom.pace.edu)
- Conference on Weblogs and Social Media (ICWSM), Conference on Artificial Intelligence (AAAI), Knowledge Discovery and Data Mining (KDD), Association for Advancement of Artificial Intelligence (AAAI). [http://www.aaai.org/](http://www.aaai.org/)

Data Sets


Barabasi, A.-L. & Toroczkai, Z. CCNR Lab at the University of Notre Dame http://www.nd.edu/~networks/resources.htm

### People and Research Groups

- **Science of Networks in Communities (SONIC).** Noshir Contractor. http://sonic.northwestern.edu
- **Amaral Lab.** Luis Amaral. http://amaral.northwestern.edu
- **Center for Connected Learning.** Uri Wilensky. http://www.ccl.sesp.northwestern.edu
- **Annenberg Networks Network.** Peter Monge, University of Southern California. http://ann.uscannenberg.org/
- **NETLAB.** Barry Wellman, University of Toronto. http://www.chass.utoronto.ca/~wellman/
- **LINKS Center.** Steve Borgatti, University of Kentucky. http://linkscenter.org/
- **Santa Fe Institute.** http://www.santafe.edu/
- **Center for the Study of Complex Systems, University of Michigan.** http://www.cscs.umich.edu/

### Online Network Courses

- **Social Network Analysis – Lada Adamic (Fall 2012) – Recommended.** https://www.coursera.org/course/sna
- **Networked Life - Michael Kearns (Fall 2012) - Unknown** https://www.coursera.org/course/networks