

MI 891 SOCIAL NETWORK ANALYSIS
Michigan State University

Fall 2019

Mon 12:40-3:30pm (CAS 171)

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Office hours: Mondays 10:00-11:00am and by appointment (CAS 435)

All course correspondence, including posted grades, announcements, additional readings, etc. will be posted on the D2L website for this course: <https://d2l.msu.edu/>

DESCRIPTION

Social networks is the description of a diverse body of theory and empirical study based upon the premise that *relationships*, in contrast to *individual attributes*, are useful for understanding social structure and social behavior. Network analysts study the structure of these relations, how the patterns of social interactions allocate resources, constrain behavior, and channel information and social change. Their methods can be quantitative or qualitative.

This course is a non-mathematical introduction to social network analysis. It is an introduction to the fundamental concepts related to the theory and measurement of social structure, including: network size, diversity, centrality, homophily, multiplexity, frequency of contact, tie duration, and tie strength. We will consider how using a network perspective can help to conceptualize and clarify many different types of important questions and offer new ways of answering those questions. The course will show how attending to the organization of social relationships can increase our understanding of various aspects of individual, community, and organizational life, such as health, social support, and the spread of information. Particular attention is given to the role of communications media and the role of new technologies in the maintenance and formation of social networks. The topic of “social capital” – the resources that people may access through their social contacts – will also be a central focus of the course. What are the costs and benefits of different kinds of network structure for people and for groups? We will constantly ask how and why various forms of personal social capital are unequally distributed, and how this contributes to social mobility, the reproduction of inequality, and democratic participation.

PREREQUISITS

none

LEARNING OBJECTIVES

At the end of the course students will be able to critically review the theory, methodology, and findings of a research study that uses social network analysis; describe the history of studies on social networks; and determine and apply appropriate network theory and methodologies to a research question in their area of study.

ASSESSMENT

A major component of the course will involve the development and use of a personal blog. Students will receive access to the necessary blogging software and will be provided with basic instruction on how to maintain a blog. Students are not expected to have prior experience with blogs.

Final grades will be based on an evaluation of 10 blog postings on the subject of the weekly course readings (20%), 20 comments on other students' blog postings (10%), a presentation outlining the final project (10%), class participation (10%), and a final project (50%). Students are urged to pay close attention to due dates, late assignments will not be graded.

Final grades will be assigned according to the following scale:

4.0	93-100%
3.5	87-92%
3.0	80-86%
2.5	77-79%
2.0	70-76%
1.5	67-69%
1.0	60-66%
0.0	below 60%

Grading of Assignments and Presentations

A grade equivalent to a 4.0 will be awarded to an assignment that both fills the terms of the assignment and shows evidence of out-of-the-ordinary, creative, analytical, and interesting thought. A 3.0 will be awarded if the terms of the assignment have been fulfilled thoroughly and thoughtfully, with some evidence of originality and creativity. Assignments that merely fulfill the terms of the assignment will receive a 2.0. Assignments that fail to fulfill the terms of the assignment will receive a grade equivalent to a 1.0. An assignment that does not approximate the terms of the assignment will receive a 0.0. All grades are final. Please do not ask to have your grade changed for reasons other than mathematical error. A grade of "incomplete" will not be assigned except in the most unusual, extreme (and generally emergency) circumstances.

Participation and Attendance

Class meetings will be in a seminar format, there will be a limited amount of lecturing, instead students and instructor will explore key concepts through a guided dialogue. Students are expected to have read all of the week's readings in advance of the course meeting. Participation grades will be based on demonstrated familiarity and critical reflection on the readings, involvement in classroom activities and exercises, and engagement in discussions. The participation grade is assessed above and beyond your attendance, just showing up for class will not earn you any participation points. You must do the readings, or this class will be a waste of time. You can expect that the instructor will call on students at random to provide a summary of specific readings and to provide a basic comparison to prior course content.

Use of mobile phones and computing devices in class, for purposes unrelated to note taking and direct class participation, will adversely affect your participation grade. Students are expected to attend all classes. Missing more than two classes may result in an automatic zero for the class participation grade. Students who experience the loss of a loved one and receive an approved grief absence request are exempt from this policy (the grief absence request form is available at <https://reg.msu.edu/StuForms/StuInfo/GriefAbsenceForm.aspx>). Students are responsible for getting course notes from their classmates, the instructor will not provide you with notes, slides or exam guides.

Students are never granted permission to make audio or video recordings of the class.

Blogs

Students are responsible for submitting short commentaries on 10 of the weeks' readings (800-1,000 words). Blog posts are intended to be less formal than a class paper (but must follow traditional guidelines for academic integrity). Students are encouraged to include pictures, videos, and links to external content. Commentaries should include all of the readings from each week and consist of limited

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summary; focusing on an evaluation of the readings and identifying 2-3 questions for discussion during the class meeting (focus on the papers' key issues, strengths and limitations, and a comparison to previous weeks' readings). Each commentary must be submitted as a post to the student's personal class blog by 5:00pm the day before class meeting. Students are welcome to make additional posts on their blog on class related subjects.

Each student is responsible for contributing 20 comments on fellow students' blogs. Comments should be a minimum of 300 words and offer a critique of that week's posting, seek clarification, compare or contrast postings, or provide additional evidence or new information (such as a link to a related article, website, etc.). Each student must contribute a minimum of 20 comments, credit will be given for a maximum of two comments per week, students will not receive credit for commenting on the same blog more than six times over the duration of the course. Comments must be posted by noon on the day of class for posts related to that week's readings. Students are encouraged to reply to comments and discuss with their classmates.

Blogs are graded as pass/fail. If you submit your blog post on time, if it meets the minimum requirements for length, and it fulfills the terms of the assignment (i.e., commentary not summary!) you will receive 100%. If the blog post is not submitted, submitted late, does not meet the minimum length, is not on the assigned subject matter, or otherwise does not meet the terms of the assignment, you will get a zero. I will occasionally send you feedback on your blog posts to let you know how you are doing, but given the volume of posts/comments and the size of the class, do not expect feedback on all of your posts. Blogs are intended to be a peer driven and a peer evaluated exercise. To receive credit for blog posts/comments, before the last day of class students must submit a log with permalinks to all posts/comments using the online form provided by the instructor.

Proposal Presentation (Due: Oct 29)

The in-class presentation is as an opportunity for students to explore individual interests and to receive immediate feedback from the instructor and classmates on plans for their final project. The presentation should be 10 minutes long, use PowerPoint (or something similar), and follow the format of a formal conference presentation. A copy of your presentation (on paper) must be given to the instructor at the time of your presentation. Presentations should include the following elements:

- A research question.
- A justification for why the question is of sufficient social importance and/or scientific relevance.
- Three citations and a brief review of key research in the area.
- Hypotheses (if appropriate).
- Research methods and procedure.
- Main strengths and weaknesses of your methods.

Informal project approval must be obtained in advance of the proposal presentation.

Final Project (Due: Dec 10)

The final project can take on one of a number of different forms to be negotiated individually with the instructor. Projects should deal with course themes focusing on a topic of interest to the student. Possibilities for the final paper/project include a full research proposal, software or a website, or a paper of near publishable quality based on the analysis of existing data or data collected as part of an original research project (20-25 double spaced pages).

Academic Integrity

The consequences of scholastic dishonesty are very serious. Evidence of plagiarism, cheating, fabrication, facilitation, dishonesty, academic sabotage, criminal activity, or other violations of research or professional ethics will be dealt with severely. Students are expected to fulfil the spirit of the Spartan Code of Honor. "As a Spartan, I will strive to uphold values of the highest ethical standard. I will practice

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honesty in my work, foster honesty in my peers, and take pride in knowing that honor is worth more than grades. I will carry these values beyond my time as a student at Michigan State University, continuing the endeavor to build personal integrity in all that I do.” Student conduct that is inconsistent with the academic pledge will be addressed through existing policies, regulations, and ordinances governing academic honesty and integrity. MSU Policies, Regulations and Ordinances Regarding Academic Honesty and Integrity can be found at <https://msu.edu/unit/ombud/academic-integrity/>.

COMMUNICATING WITH THE INSTRUCTOR

The instructor is here to help, please ask questions, share your ideas, and visit often during office hours. However, keep in mind that when seeking advisement and support, email is no substitute for an in person meeting. Students seeking help with the content of this course should consult with the instructor at the start of class, during office hours, or by requesting a separate appointment. Plan ahead and consult in advance of any due dates. Do not expect a detailed response by email to requests for advice or review of materials (some things are still best done in person!)

COURSE MATERIALS

All readings, files, and grades will be available from the course website (generally in the form of a PDF or a link to content): <https://d2l.msu.edu/>.

COURSE OUTLINE

This portion of the syllabus is subject to change as the course evolves. The instructor may add or remove material based on the interests and pace of the class. At times, the instructor will distribute new and timely material that appears in the news or has been recently published. It is your responsibility to learn of any changes by regularly attending class, visiting the course website, and reading your email.

Week 1 (August 28) - Introduction and Organization

Week 2 (September 9) – What is Social Network Analysis?

Borgatti, S. P., Mehra, A., Brass, D. J., & Labianca, G. (2009). Network Analysis in the Social Sciences. *Science*, 323(5916), 892-895

Marin, Alexandra, and Barry Wellman (2010). Social Network Analysis: An Introduction. Pp. 11-25 in *Handbook of Social Network Analysis*, edited by Peter Carrington and John Scott: Sage.

Freeman, L. C. (2000). See you in the Funny Papers: Cartoons and Social Networks. *Connections*, 23(1), 32-42.

Cutter, Chip (2019, July 19). Finding the Quiet Employees Holding Your Company Together. *The Wall Street Journal*. <https://www.wsj.com/articles/the-secret-to-finding-the-quiet-employees-holding-your-company-together-11563528611>

Week 3 (September 16) – Strong Ties

Fischer, Claude. (1982). *To Dwell Among Friends*. Berkeley: University of California Press. [Ch. 1, 7-10 (approx. 62 pages)]

Wellman, Barry, and Scot Wortley. (1990). Different Strokes from Different Folks: Community Ties and Social Support. *American Journal of Sociology* 96(3):558-88.

McPherson, M., Smith-Lovin, L., & Brashears, M. E. (2006). Social Isolation in America: Changes in Core Discussion Networks over Two Decades. *American Sociological Review*, 71, 353-375.

Marin, Alexandra, and Keith N. Hampton. 2019. Network Instability in Times of Stability. *Sociological Forum* 34(2):313-36.

Week 4 (September 23) – Weak Ties, Diversity and Social Capital

- Granovetter, Mark. (1973). The Strength of Weak Ties. *American Journal of Sociology* 78(6): 1360-1380.
- Burt, Ronald. (1993). The Social Structure of Competition. Pp. 65-103 in *Explorations in Economic Sociology*, edited by Richard Swedberg. New York: Sage.
- Lin, Nan. 2001. Building a Network Theory of Social Capital. Pp. 3-29 in *Social Capital: Theory and Research*, edited by Nan Lin, Karen Cook, and Ronald Burt. New York: Aldine De Gruyter.
- Hampton, K. N., Lee, C. J., & Her, E. J. (2011). How New Media Afford Network Diversity: Direct and Mediated Access to Social Capital Through Participation in Local Social Settings. *New Media & Society*, 13(7), 1031-1049
- Levine, Cynthia S., Erika M. Manczak, Paula J. Ham, Van Le, and Edith Chen. 2017. The relationship between parents' social network diversity and pulmonary function among children with asthma. *Culture and Brain* 5(1):71-89.

Week 5 (September 30) – Network Size and Homophily.

- McPherson, Miller, Lynn Smith-Lovin and James Cook. (2001). Birds of a Feather: Homophily in Social Networks. *Annual Review of Sociology* 27: 415-444.
- Kossinets, Gueorgi, and Duncan Watts. (2009). Origins of Homophily in an Evolving Social Network. *American Journal of Sociology* 115(2): 405-450.
- Goel, S., Mason, W., & Watts, D. J. (2010). Real and Perceived Attitude Agreement in Social Networks. *Journal of Personality and Social Psychology* 99(4), 611-621.
- Hill, R. A., & Dunbar, R. I. M. (2003). Social Network Size in Humans. *Human Nature*, 14(1), 53-72.
- Killworth, Peter, Eugene Johnsen, H Russell Bernard, Gene Ann Shelley, and Christopher McCarthy. 1990. Estimating the Size of Personal Networks. *Social Networks* 12: 289-312.
- McCarty, C., Killworth, P. D., Bernard, H. R., Johnsen, E. C., & Shelley, G. A. (2001). Comparing Two Methods for Estimating Network Size. *Human Organization* 60(1), 28-39.

Week 6 (October 7) – Small World, and Scale Free Networks

- Milgram, Stanley. (1967). The Small-World Problem. *Psychology Today* 1:62-67
- Kilworth, Peter, Christopher McCarthy, Russell Bernard and Mark House. (2006). The Accuracy of Small World Chains in Social Networks. *Social Networks* 28(1): 85-96.
- Watts, Duncan (2016, Feb 10). How Small is the World, Really? *Medium*.
<https://medium.com/@duncanjwatts/how-small-is-the-world-really-736fa21808ba>
- Watts, Duncan. (2004). The 'New' Science of Networks. *Annual Review of Sociology* 30: 243-270.
- Barabasi, Albert-Laszlo and Eric Bonabeau. (2003). Scale-Free Networks. *Scientific American* 288(5).
- Bonacich, Phillip. (2004). The Invasion of the Physicists. *Social Networks* 26(3): 285-288.

Week 7 (October 14) – Measurement

- Zwijze-Koning, K., & Jong, M. D. T. D. (2005). Auditing Information Structures in Organizations. *Organizational Research Methods*, 8(4), 429-453.
- Marin, Alexandra & Keith Hampton (2007). Simplifying the Personal Network Name Generator: Alternatives to Traditional Multiple and Single Name Generators. *Field Methods* 19(2), 163-193.
- van der Gaag, Martin, Tom .A.B. Snijders, and Henk Flap (2008). Position Generator Measures and Their Relationship to Other Capital Measures. Pp 27-48 in *Social Capital: An International Research Program*, edited by Nan Lin and Bonnie Erickson: Oxford, UK: Oxford.
- Fu, Yang-chih (2008). Position Generator and Actual Networks in Everyday Life: An Evaluation with Contact Diary. Pp 49-64 in *Social Capital: An International Research Program*, edited by Nan Lin and Bonnie Erickson: Oxford, UK: Oxford.
- McCarty, Christopher, Molina, Jose Luis, Aguilar, Claudia, & Rota, Laura (2007). A Comparison of Social Network Mapping and Personal Network Visualization. *Field Methods* 19(2): 145-162.

Week 8 (October 21) – Centrality

Freeman, Linton. (1979). Centrality in Social Networks: Conceptual Clarification. *Social Networks* 1: 215-39.

Borgatti, Stephen. (2005). Centrality and Network Flow. *Social Networks* 27(1): 55-71.

White, Scott, and Padhraic Smyth. "Algorithms for estimating relative importance in networks."

Proceedings of the ninth ACM SIGKDD international conference on Knowledge discovery and data mining. ACM, 2003.

Week 9 (October 28) – Computer Networks as Social Networks I

Hampton, K. N., Sessions, L., & Ja Her, E. (2011). Core Networks, Social Isolation, and New Media: Internet and Mobile Phone Use, Network Size, and Diversity. *Information, Communication & Society*, 14(1), 130-155.

Burke, Moira, and Robert E. Kraut. 2016. The Relationship Between Facebook Use and Well-Being Depends on Communication Type and Tie Strength. *Journal of Computer-Mediated Communication* 21(4):265-81.

Hampton, Keith N. 2016. Persistent and Pervasive Community: New Communication Technologies and the Future of Community. *American Behavioral Scientist* 60(1):101-24.

Hampton, Keith N. 2019. Social Media and Change in Psychological Distress Over Time: The Role of Social Causation. *Journal of Computer-Mediated Communication*.

Week 10 (November 4) – Presentations.

Week 11 (November 11) – Computer Networks as Social Networks II

Hobbs, William R., Moira Burke, Nicholas A. Christakis, and James H. Fowler. 2016. Online social integration is associated with reduced mortality risk. *Proceedings of the National Academy of Sciences* 113(46):12980-84.

Backstrom, Lars, and Jon Kleinberg. 2014. Romantic partnerships and the dispersion of social ties: a network analysis of relationship status on Facebook. Pp. 831-41 in Proceedings of the 17th ACM conference on Computer supported cooperative work. Baltimore, Maryland, USA: ACM.

Jones, Jason J, Jaime E Settle, Robert M Bond, Christopher J Fariss, Cameron Marlow, and James H Fowler. 2013. Inferring tie strength from online directed behavior. *PloS One* 8(1):e52168.

Week 12 (November 18) – Social Integration

Goodyear, Sarah (2013, September 26). Kids With a Diverse Group of Friends Feel Safer at School. *City Lab*. <https://www.citylab.com/equity/2013/09/kids-diverse-group-friends-feel-safer-school/7032/>

Badger, Emily and Quoc Trung Bui (2018, September 19). How Connected Is Your Community to Everywhere Else in America? *New York Times*.

<https://www.nytimes.com/interactive/2018/09/19/upshot/facebook-county-friendships.html?mtrref=undefined&assetType=REGIWALL>

Sampson, Robert. (2006). Collective Efficacy Theory: Lessons Learned and Directions for Future Inquiry. Pp 149-168 in *Taking Stock: The Status of Criminological Theory*, edited by Francis T. Cullen, John Paul Wright, and Kristie R. Blevins.

Cote, Rochelle and Bonnie Erickson (2009). Untangling the Roots of Tolerance. *American Behavioral Scientist* 52(12): 1664-1689.

Feld, S. & Carter, W. (1998). When Desegregation Reduces Interracial Contact: A Class Size Paradox for Weak Ties. *American Journal of Sociology* 103(5), 1165-1186

Shepherd, Hana, and Jeffrey Lane. 2019. In the mix: Social integration and social media adoption. *Social Science Research* 82:1-17.

Week 13 (November 25) – Diffusion and Influence

- Rogers, Everett. (2003). Diffusion Networks. Pp. 300-364 in *Diffusion of Innovations*. New York: The Free Press.
- Coleman, James S., Elihu Katz, and H. Menzel. (1957). The Diffusion of an Innovation Among Physicians. *Sociometry* 20: 253-270.
- Erickson, Bonnie. (1997). The Relational Basis of Attitudes. Pp. 99-122 in *Social Structures: A Network Approach* edited by Barry Wellman and S. D. Berkowitz. Greenwich, CT: JAI Press.
- Watts, D. J., & Dodds, P. S. (2007). Influentials, networks, and public opinion formation. *Journal of Consumer Research*, 34(4), 441-458

Week 14 (December 2) – Health

- Social isolation 'increases death risk in older people (2013, March 26). *BBC News*.
<https://www.bbc.com/news/health-21929197>
- Cohen, S., Brissette, I., Doyle, W. J., & Skoner, D. P. (2000). Social Integration and Health: The Case of the Common Cold. *Journal of Social Structure* 1(3).
- Dickens, C.M., L. McGowen, C. Percival, J. Douglas, B. Tomensen, L. Cotter, A Heagerty, and F.H. Creed. (2004). Lack of Close Confidant, but not Depression, Predicts Further Cardiac Events After Myocardial Infraction. *Heart* 90(5): 518-522.
- Christakis, Nicholas, and James Fowler. (2007). The Spread of Obesity in a Large Social Network over 32 Years. *The New England Journal of Medicine*, 357: 370-379.
- Kolata, G. (2011, August 8). Catching Obesity From Friends May Not Be So Easy. *New York Times*.
- Ertel, Karen A., M. Maria Glymour, and Lisa F. Berkman. 2008. Effects of Social Integration on Preserving Memory Function in a Nationally Representative US Elderly Population. *American Journal of Public Health* 98(7):1215-20.
- Levine, Cynthia S., Erika M. Manczak, Paula J. Ham, Van Le, and Edith Chen. 2017. The relationship between parents' social network diversity and pulmonary function among children with asthma. *Culture and Brain* 5(1):71-89.
- Christakis, Nicholas A., and James H. Fowler. 2014. Friendship and natural selection. *Proceedings of the National Academy of Sciences* 111(Supplement 3):10796-801.