

# SYA4930 Social Network Analysis

## Spring 2024

**Location:** Turlington Hall 2346

**Time:** W Period 2-4 (8:30 AM - 11:30 AM)

**Course website:** <https://ufl.instructure.com/courses/503585>

**Instructor:** Won-tak Joo (3333 Turlington Hall / [wjoo@ufl.edu](mailto:wjoo@ufl.edu))

**Office hours:** M 10:00 AM - 12:00 PM

### COURSE DESCRIPTION

Social networks are the patterned structure of relationships among individuals and/or groups. Sociologists are interested in social forces beyond the individual, and social network analysis provides tools to understand why and how these macro-level forces operate through social interactions among agents at a more micro level. For example, the decision to wear a mask during COVID-19 cannot be fully explained by an individual's knowledge and experience of the pandemic. People are exposed to different environments regarding the risk of infection, access to healthcare services, circulation of information, and exchange of social support during the pandemic. This heterogeneity is largely determined by with whom you are interacting, and through what patterns you are linked to various social actors around yourself. The goal of this course is to learn theories and techniques to systematically understand these interpersonal and/or intergroup dynamics that make a societal-level change possible (e.g., a national increase in mask-wearing). Specifically, we are going to study 1) sociological theories of emergence, growth, and decay of social networks, 2) social network mechanisms in explaining various social phenomena and socioeconomic outcomes, 3) methods to collect and construct social network datasets, and 4) basic and advanced techniques to analyze social networks.

### PREREQUISITES

Prior experience with R is recommended.

### REQUIRED TEXTS

There is no textbook for this class. Required readings will be uploaded to the course website each week. You are expected to participate in class with your laptop where R is pre-installed. You can download R (<https://cran.r-project.org/bin/windows/base/>) and Rstudio (<https://posit.co/download/rstudio-desktop/>) from these websites for free. R is also available through UFApps (<https://login.apps.ufl.edu/>).

### COMMUNICATION

All inquiries concerning the course should be sent to [wjoo@ufl.edu](mailto:wjoo@ufl.edu). Emails must include SYA4930 in the subject line. Please allow at least 24 hours during regular business hours (M-F, 9 AM – 5 PM) to respond to your email inquiries.

### GRADING POLICY

- **Weekly response to required readings (20%):** one-page response to weakly required readings (one per week, not per article) / 12pt, single space / summary (several important things you learned from the readings) + questions
- **Weekly review of empirical research (20%):** pick one among the empirical research papers from the past week and submit a one-page review / 12pt, single space / explain key findings and their implications

- **Research proposal (20%):** ≤2-page proposal including short theoretical background + data + analytic strategy (+ one extra page for the references) / explain what methods you choose and why they are suitable for your study of social networks
- **Final paper (40%):** format follows your target journal / the paper includes theoretical background + data + analytic strategy + preliminary results + discussion + references
- UF grading policies are at:  
<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

### **COURSE POLICIES**

- Any missed or late assignments will receive a score of 0 (zero) unless discussed in advance with the instructor.
- Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:  
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

### **EVALUATION POLICY**

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

### **UNIVERSITY POLICY ON ACCOMMODATING STUDENTS WITH DISABILITIES**

Students requesting accommodation for disabilities must first register at the Disability Resource Center (352-392-8565, <https://disability.ufl.edu/>). The Disability Resource Center will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

### **UNIVERSITY POLICY ON ACADEMIC MISCONDUCT**

Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at <https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>.

### **GRADING SCALE**

A	94-100
A-	90-<94
B+	87-<90
B	84-<87
B-	80-<84
C+	77-<80
C	74-<77
C-	70-<74
D+	67-<70
D	64-<67
D-	61-<64
E	0-<61

## SCHEDULE

Week	Readings	Content	R
W1		Introduction	R installation Vector Matrix
W2	<p>*Marin, A., &amp; Wellman, B. (2011). Social network analysis: An introduction. <i>The SAGE handbook of social network analysis</i>, 11-25.</p> <p>*Hanneman, R. A., &amp; Riddle, M. (2011). A brief introduction to analyzing social network data. <i>The Sage handbook of social network analysis</i>, 331-339.</p>	Type of network data	data.table igraph
W3	<p>*Freeman, L. C. (1978). Centrality in social networks: Conceptual clarification. <i>Social networks</i>, 1, 215-239.</p> <p>Bonacich, P. (1987). Power and centrality: A family of measures. <i>American journal of sociology</i>, 92(5), 1170-1182.</p> <p>Burris, V. (2004). The academic caste system: Prestige hierarchies in PhD exchange networks. <i>American sociological review</i>, 69(2), 239-264.</p> <p>Wapman, K. H., Zhang, S., Clauset, A., &amp; Larremore, D. B. (2022). Quantifying hierarchy and dynamics in US faculty hiring and retention. <i>Nature</i>, 610(7930), 120-127.</p>	Centrality	Centrality
W4	<p>*Coleman, J. S. (1988). Social capital in the creation of human capital. <i>American journal of sociology</i>, 94, S95-S120.</p> <p>*Granovetter, M. S. (1973). The strength of weak ties. <i>American journal of sociology</i>, 78(6), 1360-1380.</p> <p>Burt, R. S. (2004). Structural holes and good ideas. <i>American journal of sociology</i>, 110(2), 349-399.</p>	Social closure & weak ties	Social closure Weak ties Structural hole Betweenness
W5	<p>*Stovel, K., &amp; Shaw, L. (2012). Brokerage. <i>Annual review of sociology</i>, 38, 139-158.</p> <p>Gould, R. V., &amp; Fernandez, R. M. (1989). Structures of mediation: A formal approach to brokerage in transaction networks. <i>Sociological methodology</i>, 89-126.</p> <p>Desmond, M. (2012). Disposable ties and the urban poor. <i>American Journal of Sociology</i>, 117(5), 1295-1335.</p> <p>Levin, D. Z., Walter, J., &amp; Murnighan, J. K. (2011). Dormant ties: The value of reconnecting. <i>Organization Science</i>, 22(4), 923-939.</p>	More about weak ties	ggraph
W6	*Newman, M. E., & Girvan, M. (2004). Finding	Subgroup	Clique

	and evaluating community structure in networks. <i>Physical review E</i> , 69(2), 026113. Lorrain, F., & White, H. C. (1977). Structural equivalence of individuals in social networks. In <i>Social Networks</i> (pp. 67-98). Academic Press. Burt, R. S. (1990). Detecting role equivalence. <i>Social networks</i> , 12(1), 83-97. Moody, J., & White, D. R. (2003). Structural cohesion and embeddedness: A hierarchical concept of social groups. <i>American sociological review</i> , 103-127.		Component K-core Block Community
W7	*Barabási, A. L., & Albert, R. (1999). Emergence of scaling in random networks. <i>science</i> , 286(5439), 509-512. *Watts, D. J., & Strogatz, S. H. (1998). Collective dynamics of 'small-world' networks. <i>nature</i> , 393(6684), 440-442.	Preferential attachment	Replication of Barabasi & Albert
W8	*Centola, D., & Macy, M. (2007). Complex contagions and the weakness of long ties. <i>American journal of Sociology</i> , 113(3), 702-734. Siegel, D. A. (2009). Social networks and collective action. <i>American journal of political science</i> , 53(1), 122-138. Qiu, Z., Espinoza, B., Vasconcelos, V. V., Chen, C., Constantino, S. M., Crabtree, S. A., ... & Marathe, M. V. (2022). Understanding the coevolution of mask wearing and epidemics: A network perspective. <i>Proceedings of the National Academy of Sciences</i> , 119(26), e2123355119.	Complex contagion	Replication of Strogatz & Watts / Centola & Macy
W9	*McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. <i>Annual review of sociology</i> , 27(1), 415-444. Smith, J. A., McPherson, M., & Smith-Lovin, L. (2014). Social distance in the United States: Sex, race, religion, age, and education homophily among confidants, 1985 to 2004. <i>American Sociological Review</i> , 79(3), 432-456. Offer, S., & Fischer, C. S. (2018). Difficult people: Who is perceived to be demanding in personal networks and why are they there?. <i>American sociological review</i> , 83(1), 111-142.	Homophily & Foci	Personal networks (GSS)
W10	*Gould, R. V. (1991). Multiple networks and mobilization in the Paris Commune, 1871. <i>American Sociological Review</i> , 716-729. Gondal, N. (2022). Multiplexity as a lens to investigate the cultural meanings of interpersonal	Two-mode networks Multiplexity	Two-mode networks

	ties. <i>Social Networks</i> , 68, 209-217.		
W11	<p>*Robins, G. (2011). Exponential Random Graph Models for Social Networks. <i>The SAGE handbook of social network analysis</i>, 484-500.</p> <p>Smith, S., Van Tubergen, F., Maas, I., &amp; McFarland, D. A. (2016). Ethnic composition and friendship segregation: differential effects for adolescent natives and immigrants. <i>American Journal of Sociology</i>, 121(4), 1223-1272.</p> <p>Smith, C. M., &amp; Papachristos, A. V. (2016). Trust thy crooked neighbor: multiplexity in Chicago organized crime networks. <i>American Sociological Review</i>, 81(4), 644-667.</p> <p>Lewis, K. (2016). Preferences in the early stages of mate choice. <i>Social Forces</i>, 95(1), 283-320.</p>	ERGM	ERGM
W12	<p>*Boutyline, A., &amp; Vaisey, S. (2017). Belief network analysis: A relational approach to understanding the structure of attitudes. <i>American journal of sociology</i>, 122(5), 1371-1447.</p> <p>Bearman, P. S., &amp; Stovel, K. (2000). Becoming a Nazi: A model for narrative networks. <i>Poetics</i>, 27(2-3), 69-90.</p> <p>DellaPosta, D. (2020). Pluralistic collapse: The “oil spill” model of mass opinion polarization. <i>American Sociological Review</i>, 85(3), 507-536.</p> <p>Kozlowski, A. C., Taddy, M., &amp; Evans, J. A. (2019). The geometry of culture: Analyzing the meanings of class through word embeddings. <i>American Sociological Review</i>, 84(5), 905-949.</p>	Belief network Text network	Belief network (GSS)
W13	<p>*Hamberger, K., Houseman, M., &amp; Douglas, R. W. (2011). Kinship network analysis. <i>The SAGE handbook of social network analysis</i>, 533-549.</p> <p>Brudner, L. A., &amp; White, D. R. (1997). Class, property, and structural endogamy: Visualizing networked histories. <i>Theory and Society</i>, 26(2/3), 161-208.</p> <p>Verdery, A. M., Entwisle, B., Faust, K., &amp; Rindfuss, R. R. (2012). Social and spatial networks: Kinship distance and dwelling unit proximity in rural Thailand. <i>Social networks</i>, 34(1), 112-127.</p>	Kinship network Generalized exchange	
W14		Spatial network	
W15		Final presentation	