New Jersey Institute of Technology

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Spring 2024

COM 325-008: Social Network Theory & Analysis

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COM325: Social Network Theory & Analysis

College of Science and Liberal Arts

Department of Humanities and Social Sciences

COURSE SYLLABUS

Semester: Spring 2024
Class Meeting Days: Tuesdays & Thursdays
Class Meeting Time: 4:00 PM - 5:20 PM
Class Meeting Location: FMH 205
Instructor: Dr. Yao Sun
Office Location: CULM 435A
Office Hours: Tuesdays & Thursdays 1 – 2 pm or by appointment
Email: yao.sun@njit.edu

I. Welcome!

This is a course designed for you to review theoretical, conceptual, and analytic issues associated with social network perspectives. It will examine scholarship on the science of networks in communication across a wide array of research areas in order to take an in-depth look at theories, methods, and tools to examine the structure and dynamics of networks. You will learn to conduct social network research and analytics using computational tools and statistical models, as well as to visualize, present, and interpret findings derived from data based on networks and network analysis.

II. University Course Catalog Description

This course investigates the relationship between social networks and human behavior, with an emphasis on theoretical perspectives as well as practical applications. It is intended to review theoretical, conceptual, and analytic issues associated with network perspectives on communication, and will examine scholarship on the science of networks in communication across a wide array of research areas in order to take an in-depth look at theories, methods, and tools to understand the structure and dynamics of networks. Social network analysis is a technique derived from theory, and consideration of the intrinsic relationship between theory and application is central to the course. Focusing on the impact of information and communication technologies, the course will also explore the creation, maintenance, and transformation of social networks in contemporary online

and mediated environments. Using computational tools and statistical models, students will also learn to visualize, present, and interpret findings derived from data based on networks and network analytics.

III. Course Prerequisites

None.

IV. How to Succeed in this Course

1. Students are encouraged to take notes in class, as the midterm quiz will be completely based on the lecture slides.
2. Students are encouraged to practice with the lab demo codes in order to complete the two projects.
3. Students are encouraged to discuss with the instructor about the final paper as well as specific learning goals.
4. Do not worry about particular knowledge, content, or skills that should have been mastered in previous courses. Exposure to new ideas is one objective of this course. Do the best that you can with skills that you have mastered up until now.

V. Student Learning Outcomes

- Be able to comprehensively understand social network concepts and theories.
- Develop analytical skills as well as the ability to critically evaluate social network research.
- Conduct social network analysis using computational tools and statistical models.
- Visualize, present, and interpret findings derived from social networks data.
- Apply social network theories and analytical approaches to scholarly research on social networks.

VI. Required Readings and Course Materials

All required readings will be available in CANVAS at designated time periods throughout the semester.

- Papacharissi, Z. (Ed.). (2010). A networked self: Identity, community, and culture on social network sites. Routledge.

VII. Supplementary Texts and Materials

- Bruggeman, J. (2013). Social networks: An introduction. Routledge.
- Kadushin, C. (2012). Understanding social networks: Theories, concepts, and findings. Oxford University Press: New York, NY.

- Luke, D. (2015). A user's guide to network analysis in R. Springer Press: New York, NY.
- Segev, E. (Ed.). (2021). Semantic Network Analysis in Social Sciences. Routledge.
- Wasserman, S., & Faust, K. (1994). Social network analysis: Methods and applications. New York: Cambridge University Press.
- Yang, S., Keller, F., & Zheng, L. (2017). Social network analysis: Methods and examples. SAGE Publications: Thousand Oaks, CA.

VIII. Grading Scale

This course will adhere to the grading system below.

Grading Scale (%)	
89.5 – 100	A
86.5 – 89.4	B+
79.5 – 86.4	B
75.5 – 79.4	C+
65.5 – 75.4	C
59.5 – 65.4	D
0 – 59.4	F

IX. Grade Categories and Weights

Assessment	Percent of Final Grade
Reading Discussion (Leading + Participation)	20%
Midterm R Project	15%
Midterm Quiz	20%
Final R Project	20%
Final Literature Review Paper	25%

X. Assessment
- In each lecture class (Tuesday), one or two groups will lead the discussion of the readings (available in Canvas). Discussion leaders are expected to 1) summarize and present the articles using PowerPoint slides, 2) propose two discussion questions for each article, and 3) propose a potential research topic relevant to each article and explain why this topic will be interesting to study. Discussion of each reading article will last about 30 minutes (20-minute presentation + 10-minute open discussion). Discussion leaders are expected to provide accurate summaries and lead a thought-provoking discussion. Active participation in class discussion is strongly encouraged.
- Midterm Quiz will be completely based on the lecture slides and will test students' understanding of fundamental concepts and principles in social network theory and analysis. Detailed instructions will be offered.

- Students are expected to complete two individual R Projects (Midterm & Final). Midterm R Project is due at the end of Week 8 (Sunday, Mar 10th). Final R Project is due at the end of Week 14 (Sunday, Apr 21st). The submission file should consist of 1) programming codes, and 2) analytical outcomes. Detailed instructions will be provided prior to each project.
- Final Literature Review Short Paper (Due Date: 11:59 pm, Sunday, Apr 28th) should be at least 500 words in length, not including titles, headers, identifying information etc. Start with the readings provided in class, choose a topic that you are interested in, and explore the literature. Detailed instructions and a grading rubric will be offered.

XI. Grade Dissemination

Your grades will be posted to CANVAS. When a rubric is present, the grading will be self-explanatory. You are responsible for keeping track of your own grades, assignment deadlines, and any missing assignments. Any issue with a grade for a specific assignment or quiz must be addressed within one week of the assignment deadline.

XII. Course Schedule

Schedule	Modules	Reading Discussion	Labs
Week 1 (Jan 16 & 18)	Introduction & Syllabus Overview		Lab 1
Week 2 (Jan 23 & 25)	Network Fundamentals & Basics		Lab 2
Week 3 (Jan 30 & Feb 1)	Network Structure	Session 1	Lab 3
Week 4 (Feb 6 & 8)	Advanced Network Structure I	Session 2	Lab 4
Week 5 (Feb 13 & 15)	Advanced Network Structure II	Session 3	Lab 5
Week 6 (Feb 20 & 22)	Social Networks in the Real World I: Diffusion in Social Networks	Session 4	Lab 6
Week 7 (Feb 27 & 29)	Network Dynamics I	Session 5	Lab 7
Week 8 (Mar 5 & 7)	Midterm Week	Midterm Test (In-class)	Midterm R Project (Due Sunday, Mar 10)
Week 9 (Mar 12 & 14)	Spring Recess	No Class	No Class
Week 10 (Mar 19 & 21)	Network Dynamics II	Session 6	Lab 8
Week 11 (Mar 26 & 28)	Network Dynamics III	Session 7	Lab 9
Week 12 (Apr 2 & 4)	Social Networks in the Real World II	Session 8	Lab 10

Week 13 (Apr 9 & 11)	Social Networks in the Real World III	Session 9	Reading Discussion Session 10
Week 14 (Apr 16 & 18)	Final Paper High Density Session & Project Q&A		Final R Project (Due Sunday, Apr 21)
Week 15 (Apr 23 & 25)	Final Literature Review Paper	Final Paper (Due Sunday, Apr 28)	
Remarks			

Note: The Course Schedule is subject to revision

XIII. Course Policies

Late Work Policy: There is no make-up for the mid-term quiz. Papers turned in late will be assessed a penalty: a half-letter grade if it is one day late, and a full-letter grade for 2-7 days late. Papers will not be accepted if overdue by more than seven days. No extension permitted. Plan early!

Grades of "Incomplete": The current university policy concerning incomplete grades will be followed in this course. An Incomplete grade ("I") is exceptional and granted at the instructor's discretion only when students are unable to complete course requirements due to illness or other circumstances beyond their control. In other words, an "I" grade may be awarded to a student only when a small portion of the student's work is incomplete and only when the student is otherwise earning a passing grade. The course instructor and student must complete and sign the "I" Grade Contract Form that describes the work to be completed, the date it is due, and the grade the student would earn factoring in a zero for all incomplete assignments. The time limit for removing the "I" is to be set by the instructor, and it will not exceed one semester from the original date grades were due for this course. An "I" grade not cleared within one semester (including summer sessions) will revert to the grade noted on the contract (an "IF" in most cases).

XIV. Technology and Media

Canvas: This course will use CANVAS to distribute course materials and grades. If you need help learning how to perform various tasks related to this course or other courses being offered in Canvas, please view the following videos or consult the Canvas help guides. You may also contact IST Department at 973-596-2900 or ServiceDesk@njit.edu.

Laptop Usage: Students are encouraged to use laptop only for learning purposes.

Classroom Devices/Student Recording: Tape recorders are not allowed.

Phone Usage: Phones should be on silent mode. Students are NOT encouraged to check messages or surf the Internet during class. It is preferred that students not take photos/video/audio recordings of the lectures.

XV. **University Policies & Resources**

Attendance Policy: All students are expected to attend each class, arrive on time, and actively participate in class. Students are allowed <u>one</u> unexcused absence. Every unexcused absence after the "freebie" will cause your participation score to drop a full letter grade. Excused absences will be accommodated on a case-by-case basis.

Academic Integrity Policy: The essential quality of this Policy is that each student shall demonstrate honesty and integrity in the completion of all assignments and in the participation of the learning process. Adherence to the University policy on Academic Integrity promotes the level of integrity required within the university and professional communities and assures students that their work is being judged fairly with the work of others. This Policy defines those behaviors which violate the principles of academic integrity, describes a range of appropriate sanctions for offenses, and identifies a method for promoting the principle of academic integrity on campus.

Accessibility Resources & Service Accommodations: The Office of Accessibility Resources and Services works in partnership with administrators, faculty and staff to provide reasonable accommodations and support services for undergraduate, graduate, doctoral, and visiting students with disabilities who have provided our office with medical documentation to receive services. We strive to promote an inclusive environment that encompasses advocacy and access to all campus resources.

End of Semester Student Evaluations: All classes at NJIT make use of an online system for students to provide feedback to the University regarding the course. These surveys will be made available at the end of the semester, and the University will notify you by email when the response window opens. Your participation is highly encouraged and valued.

Office of Academic Advising (OAA): The Office of Academic Advising (OAA) was established in order to assist in the advisement of students who are undecided in their major, transitioning into another major at NJIT, and those students who need additional support to graduate successfully and in a timely manner. OAA is a place where students will get intentional and intrusive advising, by a supportive academic advisor that will enable them to grow developmentally and give them the motivation they need to complete their degree.

The Writing Center: The Writing Center, located on the ground floor of CKB, is a free resource which offers on-site tutoring. We provide one-on-one and group tutoring sessions to students from all disciplines, during the fall and spring semesters. During Center hours, tutors are available to work with students on any aspect of their writing, from generating ideas and developing arguments, to working through drafts to their completion and revising effectively.

XVI. Important Dates

First Day	Tuesday, January 16th
Drop/Add Deadline	Monday, January 22nd
Withdrawal Deadline	Monday, March 4th
Spring Recess	Sunday, March 10th – Saturday, March 16th
Spring Semester Classes End	Tuesday, April 30th