SOCIAL NETWORKS
SOCI 902
Fall (August 17, 2018- November 19, 2020)
Wednesday, 2:30 PM - 5:00 PM
707 Oldfather Hall
University of Nebraska-Lincoln

Professor Robin Gauthier
ggauthier3@unl.edu

Office Hours: Tuesday/Thursday 10:00am-11:00am and by appointment
Office Location: https://unl.zoom.us/j/5827691603
Password: simmel

COURSE OVERVIEW

Network analysis is the “study of interaction among social actors” (Freeman 2004). Network analysis has a long history in sociology and anthropology and has experienced a dramatic increase in popularity over the last 15 years. Network techniques are now utilized by a wide range of academic disciplines (including sociology, anthropology, physics, biology, computer science, economics, political science, etc.), as well as by some of the most successful companies in the world (amazon, twitter, google…).

This class offers an introduction to the theoretical, methodological and substantive underpinnings of social network analysis. Network analysis is a unique approach as the focus is on the relationships connecting actors, rather than on the properties of the actors themselves. At its core, network analysis is an approach for studying the social world that recognizes: a) that actors are interdependent, that the behavior of one actor cannot be understood in isolation; and b) that a social system cannot be understood based on isolated individual actors-that the whole is larger than the sum of its parts. Just as we cannot understand how an engine works by laying out the pieces of the engine, we cannot understand how the social world works by studying individuals. The key is how the pieces (or actors) are connected.

The class combines theory, methods and substantive applications. The substantive topics are varied and are subject to change, depending on the interests of the class. At minimum, we will cover issues of disease spread, delinquent behavior, power/status, friendship, getting a job, organizational affiliations, and cultural consumption.

Overall, there are three main objectives:
a) learn the theoretical/conceptual ideas at the heart of the network approach
b) learn how to analyze and interpret network data using R, a statistical language and platform
c) learn how to apply network ideas and methods to substantive, social problems.
**REQUIRED TEXTBOOK**

There are two main textbooks for the class:


These books can be found online for a reasonable price. The remaining reading will come from journal articles and will be posted on blackboard.

**Software**

The class will make heavy use of [R](https://www.r-project.org). R is a free programming/statistical platform. It works on windows, mac and linux platforms. You are required to have R installed on your computer. You are also required to have a laptop so that you will be able to complete your assignments without access to the computer lab.

**CLASS STRUCTURE AND ASSIGNMENTS**

The class will be a mix of lectures and labs. It is important that you read the material prior to class. This will ensure that the substantive purpose and meaning of the network measures is understood. In general, you are expected to be engaged with the material and the class. You are expected to be an active participant during the labs, where we will learn how to apply the ideas presented in class to actual data. During the labs you will be given the opportunity to try your hand at an open-ended exercise. You will apply the skill and ideas discussed in class to a particular example in your subsequent homework assignments.

**Readings**

I have listed more papers than we will have time to discuss. In previous semesters (without COVID-19) we had in-class discussions that allowed us to work through the material, this semester, I will upload videos explaining the connections between the network measures and substantive applications found in the readings. I hope this will provide you with a firm understanding of which measures are appropriate under a wide range of conditions and questions, and a good reference list going forward. I do not necessarily expect you to read every supplementary paper for every week (although you are welcome to do so). I have listed the core readings for each week separately from the supplemental readings. You are expected to have read the core readings before class that day.
**Grading**

**Weekly Practice Labs: 24%**
You will have to work through weekly R programming labs that are designed to help you work through and understand the material, they will also require you to practice your new skills. There will be two quizzes embedded in each lab. Each of these quizzes will contribute 1% to your grade. You will have a chance to ask me (and your peers) for help during class time on Wednesday and you will have until Friday to complete these quizzes.

I have assigned you to two groups using your last names. This is how last names in the class were distributed as of the time I wrote this. For continuity and to reduce confusion, I will not re-assign you if the composition of our class changes.

**In-Person Meeting on Wednesday 2:30-4:10**
Group 1: A-O

**In-person Meeting on Wednesday 4:15-5:00**
Group 2: P-Z

**Weekly Homework Assignments: 48%**
You will have weekly assignments to ensure that you are able to apply the material from the R tutorial labs to another, closely related problem. Each of these quizzes will contribute 4% to your grade. You will have until Monday to complete these quizzes. You must complete these assignments on your own.

**Research Paper: 25%**
The main assignment in the course is a research paper, in which you perform an empirical analysis on real network data and write up the results. The research paper must include: an introduction with a substantive/theoretical justification for the project; an analysis of network data; a summary of results; and a conclusion. The hope is that this will be a start to a publishable paper. The paper is due during the scheduled final for the class. The final draft of your paper will contribute 20% to your final grade.

You will also be required to turn in some initial results and a summary of the project a month before the actual paper is due. This is designed to ensure that you are making sufficient progress and it will be worth 5% of your final grade. You must include a visualization of the network, summary measures, and a 3 page intro/summary of the project.

You will choose the research question you’d like to answer, what data you would like to use, etc., but you must get my approval for the project before you begin. I can also help you find data and a research question if you are struggling on your own. We will discuss the researcher paper in more detail during class, including a grading rubric and a discussion of possible data sources.

**Mid semester class evaluation: 3%**
I will ask you to write your thoughts about the class, what you think is going well, and where you would like to see improvement about half way through the semester. I will ask you to place
your responses into an envelope and sign your name on a separate piece of paper to maintain your anonymity.

**Course Requirements and Grades (100 points total):**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Points</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly practice labs (24 @ 1 pts each)</td>
<td>24</td>
<td>24%</td>
</tr>
<tr>
<td>Weekly homework assignments (12 @ 4 pts each)</td>
<td>48</td>
<td>48%</td>
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<tr>
<td>Research paper midpoint (1 @ 5 pts)</td>
<td>5</td>
<td>5%</td>
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<tr>
<td>Final Research paper (1 @ 20 pts)</td>
<td>20</td>
<td>20%</td>
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<tr>
<td>Mid-semester class evaluation (1 @ 3 pts)</td>
<td>3</td>
<td>3%</td>
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Total: 100%

**Grade Scale for the Course**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score Range</th>
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<tbody>
<tr>
<td>A+</td>
<td>97-100</td>
</tr>
<tr>
<td>A</td>
<td>93-96</td>
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<tr>
<td>A-</td>
<td>90-92</td>
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<tr>
<td>B+</td>
<td>87-89</td>
</tr>
<tr>
<td>B</td>
<td>83-86</td>
</tr>
<tr>
<td>B-</td>
<td>80-82</td>
</tr>
<tr>
<td>C+</td>
<td>77-79</td>
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<tr>
<td>C</td>
<td>73-76</td>
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<tr>
<td>C-</td>
<td>70-72</td>
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<tr>
<td>D+</td>
<td>67-69</td>
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<tr>
<td>D</td>
<td>63-66</td>
</tr>
<tr>
<td>D-</td>
<td>60-62</td>
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<tr>
<td>F</td>
<td>&lt;=59</td>
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**Academic Honesty**

Academic honesty is essential to the existence and integrity of an academic institution. The responsibility for maintaining that integrity is shared by all members of the academic community. The University's [Student Code of Conduct](https://example.com) addresses academic dishonesty. Students who commit acts of academic dishonesty are subject to disciplinary action and are granted due process and the right to appeal any decision.

**Services for Students with Disabilities**

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can discuss options privately. To establish reasonable accommodations, I may request that you register with Services for Students with Disabilities (SSD). If you are eligible for services and register with their office, make arrangements with me as soon as possible to discuss your accommodations so they can be implemented in a timely manner. SSD contact information: 117 Louise Pound Hall; 402-472-3787.

**Counseling and Psychological Services**

UNL offers a variety of options to students to aid them in dealing with stress and adversity. [Counseling and Psychological & Services (CAPS)](https://example.com) is a multidisciplinary team of psychologists and counselors that works collaboratively with Nebraska students to help them explore their feelings and thoughts and learn helpful ways to improve their mental, psychological and emotional well-being when issues arise. CAPS can be reached by calling 402-472-7450. [Big Red Resilience & Well-Being](https://example.com) (BRRWB) provides one-on-one well-being coaching to any student who wants to enhance their well-being. Trained well-being coaches help students create and be grateful for positive experiences, practice resilience and self-compassion, and find support as they need it. BRRWB can be reached by calling 402-472-8770.

**Video or Audiotaping Class Sessions**
Due to the sensitive and controversial nature of some of the topics that will be discussed over the duration of the semester, all classes are closed to the Press/Media. No video or audio taping of class sessions is allowed unless you obtain my permission to do so.

**Face Coverings Syllabus Statement**

As of July 17, 2020 and until further notice, all University of Nebraska–Lincoln (UNL) faculty, staff, students, and visitors (including contractors, service providers, and others) are required to use a facial covering at all times when indoors except under specific conditions outlined in the COVID 19 face covering policy found at: https://covid19.unl.edu/face-covering-policy. This statement is meant to clarify classroom policies for face coverings:

To protect the health and well-being of the University and wider community, UNL has implemented a policy requiring all people, including students, faculty, and staff, to wear a face covering that covers the mouth and nose while on campus. The classroom is a community, and as a community, we seek to maintain the health and safety of all members by wearing face coverings when in the classroom. Failure to comply with this policy is interpreted as a disruption of the classroom and may be a violation of UNL’s Student Code of Conduct.

Individuals who have health or medical reasons for not wearing face coverings should work with the Office of Services for Students with Disabilities (for students) or the Office of Faculty/Staff Disability Services (for faculty and staff) to establish accommodations to address the health concern. Students who prefer not to wear a face covering should work with their advisor to arrange a fully online course schedule that does not require their presence on campus. Students in the classroom:

If a student is not properly wearing a face covering, the instructor will remind the student of the policy and ask them to comply with it.

If the student will not comply with the face covering policy, the instructor will ask the student to leave the classroom, and the student may only return when they are properly wearing a face covering.

If the student refuses to properly wear a face covering or leave the classroom, the instructor will dismiss the class and will report the student to Student Conduct & Community Standards for misconduct, where the student will be subject to disciplinary action.

**Instructors in the classroom:**

If an instructor is not properly wearing a face covering, students will remind the instructor of the policy and ask them to comply with it.

If an instructor will not properly wear a face covering, students may leave the classroom and should report the misconduct to the department chair or via the TIPS system for disciplinary action through faculty governance processes.

*Courses that have been granted an exception to the Face Covering Policy for pedagogical reasons are excluded. Exceptions to the Face Covering Policy are only granted after an approved health safety plan is developed.*
Course Schedule (subject to change)

WEEK 1: INTRODUCTION TO R (AUGUST 17-23)

Monday
Wednesday
    R Tutorial (online)
Friday

Required readings


Supplementary Readings


WEEK 2: TUTORIAL ON EGO NETWORK DATA (AUGUST 24-30)

Monday
Wednesday
    R Tutorial (online)
Friday

Required readings


WEEK 3: TUTORIAL ON NETWORK DATA (AUGUST 31-SEPTEMBER 6)

Monday
Wednesday
   R Tutorial (online)
Friday
   Due today: Lab Assignment 1

Required readings


Supplementary Readings

WEEK 4: TUTORIAL ON COHESION AND CENTRALITY (SEPTEMBER 7-13)

Monday
   Due today: Homework Assignment 1
Wednesday
  R Tutorial (online)
Friday
  **Due today: Lab Assignment 2**

*Required readings*


*Supplementary Readings*


Borgatti & Everett. 2006. “A Graph-theoretic perspective on centrality” p466-484 Social Networks


**WEEK 5: TUTORIAL ON COHESIVE SUBGROUPS (SEPTEMBER 14-20)**

Monday
  **Due today: Homework Assignment 2**

Wednesday
  R Tutorial (online)

Friday
  **Due today: Lab Assignment 3**
Required readings


Supplementary Readings


WEEK 6: TUTORIAL ON DYADS AND TRIADS (SEPTEMBER 21-27)

Monday

**Due today: Homework Assignment 3**

Wednesday

R Tutorial (online)

Friday

**Due today: Lab Assignment 4**

Required readings
Supplementary Readings


WEEK 7: TUTORIAL ON POSITIONS AND ROLES (SEPTEMBER 28-OCTOBER 4)

Monday

Due today: Homework Assignment 4

Wednesday

R Tutorial (online)

Friday

Due today: Lab Assignment 5

Required readings


**Supplementary Readings**


**WEEK 8: TUTORIAL ON EXPONENTIAL RANDOM GRAPH MODELS (OCTOBER 5-11)**

Monday

**Due today: Homework Assignment 5**

Wednesday

   R Tutorial (online)

Friday

**Due today: Lab Assignment 6**

**Required readings**


Supplementary Readings


WEEK 9: TUTORIAL ON EXPONENTIAL RANDOM GRAPH MODELS CONT’D (OCTOBER 12-18)

Monday
Due today: Homework Assignment 6

Wednesday
R Tutorial (online)

Friday
Due today: Lab Assignment 7

Required readings


WEEK 10: TUTORIAL ON EPIDEMIOLOGICAL MODELS OF DISEASE SPREAD (OCTOBER 19-25)

Monday
Due today: Homework Assignment 7

Wednesday
R Tutorial (online)

Friday
Due today: Lab Assignment 8

Required readings


**Supplementary Readings**


**WEEK 11: TUTORIAL ON EPIDEMIOLOGICAL MODELS OF DISEASE SPREAD CONT’D (OCTOBER 26-NOVEMBER 1)**

Monday

**Due today: Homework Assignment 8**

Wednesday

R Tutorial (online)

Friday

**Due today: Lab Assignment 9**

**Required readings**


**Supplementary Readings**


**WEEK 12: TWO MODE NETWORKS: DATA AND SUMMARY MEASURES (NOVEMBER 2-8)**

**Due today: Homework Assignment 9**

Wednesday

R Tutorial (online)

**Due today: Introduction, data and image for final paper**

Friday

**Due today: Lab Assignment 10**

**Required readings**


Supplementary Readings


WEEK 13: TWO-MODE NETWORK ANALYSIS: TOPIC MODELLING (NOVEMBER 9-15)

Monday
   Due today: Homework Assignment 10

Wednesday
   R Tutorial (online)

Friday
   Due today: Lab Assignment 11

Required readings


WEEK 14: TWO MODE NETWORK ANALYSIS: LATENT SPACES (NOVEMBER 16-19)

Monday
   **Due today: Homework Assignment 11**
Wednesday
   R Tutorial (online)
Friday
   **Due today: Lab Assignment 12**

**Required readings**


WEEK 15: TWO MODE NETWORK ANALYSIS: LATENT SPACES (NOVEMBER 20-21)

Monday
   **Due today: Homework Assignment 12**
Saturday
   **Due today: Final Paper**
<table>
<thead>
<tr>
<th><strong>R programming lab response rubric</strong></th>
<th>Good</th>
<th>Satisfactory</th>
<th>Unsatisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Complete the problem and correctly answer the question. Show your work (include your documented code) so that I can give you partial credit and see what went wrong if your answer isn’t correct.</td>
<td>1 point</td>
<td>0.5 points</td>
<td>0 points</td>
</tr>
<tr>
<td></td>
<td>The problem is correctly answered, code is included and documented.</td>
<td>The problem is answered incorrectly, but there was an honest attempt. Or the problem is answered correctly, but there is no code.</td>
<td>The problem is unanswered, or answered hastily and incorrectly.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Weekly rubric</strong></th>
<th>Good</th>
<th>Satisfactory</th>
<th>Unsatisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Complete the problem and correctly answer the question. Show your work (include your documented code) so that I can give you partial credit and see what went wrong if your answer isn’t correct.</td>
<td>3-4 point</td>
<td>2-3 points</td>
<td>0-2 points</td>
</tr>
<tr>
<td></td>
<td>The problem is generally answered correctly, code is included and documented.</td>
<td>The problem is answered incorrectly, but there was an honest attempt. Or the problem is answered correctly, but there is no code.</td>
<td>The problem is unanswered, or answered hastily and incorrectly.</td>
</tr>
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