
First-Year Seminar: Networks

Professor: Allison Luedtke

September 10, 2021

1. COURSE INFORMATION

- **Instructor:** Allison Luedtke
 - Email: luedtk2@stolaf.edu
 - Office: Holland Hall 304
 - Office Hours: Tuesdays 11:00 - 2:00 or By Appointment
- **Course Description:** How do the connections among people, places, businesses, and other agents change the world? How does misinformation propagate on social media? Did colleges look to their peers for ideas on how to open in the face of the Coronavirus pandemic? How did loans between banks lead to the longest recession in US history? Networks and network theory can be used to answer these questions. In this course, we will explore the mathematics, science, and economics of networks. We will read, analyze, question, and reflect on scholarly work in these areas. In class, we will learn new methods, explore data, and discuss our findings with our peers. By the end of the semester, we will be able to analyze how the networks in which we find ourselves and the connections that we make can help us navigate our place in the world.
- **Meeting Time:** MWF 10:45 - 11:40 AM
- **Course Books:**
 - “Linked” by Albert Laszlo-Barabasi
 - “The Human Network” by Matthew O. Jackson
 - “Shape” by Jordan Ellenburg
- **Tentative Test Dates**
 - Test 1: Friday October 8
 - Test 2: Monday November 15
 - **(Cumulative) Final Exam: TBD**

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- **Grading:**
 - Tests 1 and 2: 20% each
 - Homework, Classwork, and Written Assignments: 10%
 - Research Project: 30%
 - Final Exam: 20%
 - **Laptops:**
 - Laptops are fine. I reserve the right to change this position at any point throughout the semester if they become disruptive.
 - **Academic Integrity:**
 - If you cheat, plagiarize, or in any way turn in work that is not your own, you will receive a failing grade in the course.
 - **Anti-Racist Classroom:**
 - I am committed to creating an anti-racist environment in this class. Not only will racism of any kind not be tolerated, but we will work together to identify ways that we, as practitioners of economics, can contribute to the dismantling of systemic racism in the classroom, school, community, and profession.
 - **Disability and Access:**
 - I am committed to supporting the learning of all students in my class. Students seeking accommodations, please contact Disability and Access staff at 507-786-3288 or by visiting the Disability and Access website.
 - **Mental Health:**
 - I recognize that you may experience a range of emotional, physical, and/or psychological issues, both in and out of the classroom, that may distract you from your learning. If you are experiencing such issues, please do not hesitate to come see me; I am here to listen. We can also discuss what further resources might be available to you.
 - **Pronouns:**
 - This course affirms people of all gender expressions and gender identities. If you go by a different name than what is on the class roster, please let me know. Using correct gender pronouns is important to me, so you are encouraged to share your pronouns with me and please correct me if I make a mistake. If you have any questions or concerns, do not hesitate to contact me.

2. COURSE OUTLINE

- **Section 1: Networks and Network Formation**

- **Text:** *Linked*

- What is a network?
- Basic Network Terminology
- Random Network Formation
- Equilibrium Network Formation
- Test 1: Networks and Network Formation

- **Section 2: Networks in Science and Economics**

- **Text:** *The Human Network*

- Centrality
- Connectivity
- Contagion
- Financial Networks
- Test 2: Networks in Science and Economics

- **Section 3: Applications of Network Science**

- **Text:** *Shape*

- Data Science
- Family Trees
- Epidemics
- Additional Topics

- **Cumulative Final Exam**