
Econ 383: Network Economics

Professor: Allison Luedtke

February 14, 2022

1. COURSE INFORMATION

- **Instructor:** Allison Luedtke
 - Email: luedtk2@stolaf.edu
 - Office: Holland Hall 304
 - Office Hours: Tuesdays 11:00 - 2:00 or By Appointment
(Please sign up using the link on Moodle.)
- **Course Description:** This course explores the nature and dynamics of connections that exist between economic agents like firms, banks, countries, and individuals. How do loans between banks cause recessions? How do high schools look to their peers for policy ideas? How does misinformation spread on social media? Students will use economic theory as well as economic data to answer these questions and more.
- **Meeting Time:** MWF 12:55 - 1:50
- **Textbook:**
 - *Social and Economic Networks* by Matthew O. Jackson (Jackson 2008)
- **Tentative Test Dates**
 - Test 1: Wednesday March 9
 - Test 2: Monday April 4
 - Test 3: Friday April 29
 - **(Cumulative) Final Exam: TBD**
- **Grading:**
 - Tests 1 and 2: 20% each
 - Homework, Classwork, and Short News Articles: 10%
 - Empirical Research Project: 30%
 - Final: 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: Introduction, Basic Graph Theory

- Introduction to Networks
- Graph Theory Terminology and Concepts
- Eigenvectors and Eigenvalues
- Economic Examples
- Readings:
 - Textbook Chapters 1 and 2
 - (Galeotti, Golub, and Goyal 2020)
 - (Bearman, Moody, and Stovel 2004)
 - (Iyoha 2021)
- **Test 1: Introduction and Basic Graph Theory**

Section 2: Game Theory and Networks

- Introduction/Review of Game Theory
- Pairwise Stability
- Efficient Networks
- Decisions and Behavior
- Readings:
 - Textbook Chapters 6 and 9
 - (A. O. Luedtke 2020)
 - (Taschereau-Dumouchel and University 2020)
- **Test 2: Game Theory and Networks**

Section 3: Special Topics in Network Economics

- Epidemics and SIR Models
- Models of Network Formation
- Networked Markets
- Readings:
 - Textbook Chapters 5, 7, and 10
 - (A. Luedtke and Young 2021)
 - (Acemoglu, Ozdaglar, and Tahbaz-Salehi 2015)

Cumulative Final Exam

REFERENCES

- [1] Daron Acemoglu, Asuman Ozdaglar, and Alireza Tahbaz-Salehi. “Systemic Risk and Stability in Financial Networks”. en. In: *American Economic Review* 105.2 (Feb. 2015), pp. 564–608. ISSN: 0002-8282. DOI: 10.1257/aer.20130456. URL: <https://pubs.aeaweb.org/doi/10.1257/aer.20130456> (visited on 04/08/2021) (Go back).
- [2] Peter S. Bearman, James Moody, and Katherine Stovel. “Chains of Affection: The Structure of Adolescent Romantic and Sexual Networks”. In: *American Journal of Sociology* 110.1 (July 2004). Publisher: The University of Chicago Press, pp. 44–91. ISSN: 0002-9602. DOI: 10.1086/386272. URL: <https://www.journals.uchicago.edu/doi/abs/10.1086/386272> (visited on 04/08/2021) (Go back).
- [3] Andrea Galeotti, Benjamin Golub, and Sanjeev Goyal. “Targeting Interventions in Networks”. en. In: *Econometrica* 88.6 (2020), pp. 2445–2471. ISSN: 1468-0262. DOI: <https://doi.org/10.3982/ECTA16173>. URL: <https://onlinelibrary.wiley.com/doi/abs/10.3982/ECTA16173> (visited on 04/08/2021) (Go back).
- [4] Ebehi Iyoha. “Estimating Productivity in the Presence of Spillovers: Firm-level Evidence from the US Production Network”. en. In: (2021), p. 77 (Go back).
- [5] Matthew O. Jackson. *Social and economic networks*. eng. OCLC: 254984264. Princeton, NJ: Princeton Univ. Press, 2008. ISBN: 978-0-691-14820-5 978-0-691-13440-6 (Go back).
- [6] Allison Luedtke and Eric Young. “Fortifying the Banks”. In: (2021). URL: <https://allisonluedtke.github.io/wobsite/BanksDraft1010.pdf> (Go back).
- [7] Allison Oldham Luedtke. “Aggregate Output Changes in Production Networks”. en. In: (2020), p. 33 (Go back).
- [8] Mathieu Taschereau-Dumouchel and Cornell University. “Cascades and Fluctuations in an Economy with an Endogenous Production Network”. en. In: (2020), p. 62 (Go back).

3. RESEARCH PROJECT

You will identify and answer an interesting empirical or theoretical economic network question. You will then simulate this model computationally and use the results of these simulations to answer the question.

I will provide feedback on every aspect of this project except for the last item you turn in: the final draft of the research paper.

Components:

1. **Short News Articles** - You will write three different news articles about elements of the economy that relate to economic networks that you find interesting. This will allow you to explore potential topics for your research paper. Each article will consist of:
 - Title
 - Between 500 - 700 words
 - At least five references
2. **Research Paper** - You will produce a research paper, approximately 10 pages long, including the following sections:
 - Introduction: The introduction to your paper will answer the following questions
 - What is the big picture motivation?
 - What do you do in this paper?
 - What do you find?
 - What do we know now that we did not know before?
 - Data Description: This section will describe the data that you use to answer your research question.
 - Results: Here you will describe the results of your simulations or econometric work and answer your research question.
 - Conclusion

4. RESEARCH PROJECT DUE DATES

- **February 25:** Short News Article 1
- **March 11:** Short News Article 2
- **March 18:** Short News Article 3
- **March 28:** Data Description Draft
- **April 11:** Introduction Draft (**Peer Feedback in Class**)
- **April 18:** Results Draft
- **Last Day of Classes: Final Draft**