

Logic of (Computational) Social Inquiry

771A11 / 771A12 Autumn 2020

ECTS 7.5

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Office	Kopparhammaren 7, Rum 451		Kopparhammaren 7, Rum 453
Hours	Wednesdays, 15.00-16.00 (Weeks 34-35, 38-42) Friday, 15.00-16.00 (Week 36)		
Course period	19 August 2019 to 14 October 2020		
Language	English		

Course overview

This course is intended to introduce students to the principles of scientific inquiry, while also examining the unique features that distinguish the social sciences from other sciences. Students will learn to produce research questions, design research, and consider the micro- and macro-levels of social analysis. Special attention will be paid to computational approaches.

The course consists of lectures and seminars. All meetings are mandatory. The lectures will first address general aspects of social science research, and then go on to consider in detail four specific research methods: (i) case studies, (ii) surveys/observational data, (iii) experiments, and (iv) simulations. The final lecture will explore the cutting edge of computational social science research, along with its promises and pitfalls. The seminars will revisit the lecture materials, focusing on detailed examination of exemplary recent applications drawn from the sociological literature.

Students are strongly encouraged to contribute to a positive and active learning environment. Please ask questions during class, or let the instructor know if something is unclear or confusing. There are no stupid questions. Please show respect to your classmates when they ask questions. This is a diverse group of students from different backgrounds and what is obvious for one student may be completely new for someone else.

Course structure

Lectures: Students are expected to have completed the assigned reading before each lecture period. During each lecture the instructor will introduce a set of concepts or a method. Four of the lectures will be led by guest instructors who are experts in their respective methods. The names and contact information for the instructors responsible for each method covered in the course are as follows:

- **Observational ("large N") data:** Jacob Habinek (jacob.habinek@liu.se).
- **Case ("small N") studies:** Petri Ylikoski (petri.ylikoski@liu.se).
- **Experiments:** Marc Keuschnigg (marc.keuschnigg@liu.se).
- **Simulations:** Eduardo Tapia (eduardo.tapia@liu.se).
- **Computational social science:** Etienne Ollion (etienne.ollion@liu.se).

Seminars: seminars will follow immediately after each lecture. During the seminars students will have an opportunity to ask questions about the lectures and to discuss the assigned literature as a class and in small groups. In the case of the methods lectures, the discussion will focus on the advantages and disadvantages of each research method in order to prepare students for completing the assigned article reviews (see below for more information).

Intended learning outcomes

Following completion of the course, students should be able to:

- Produce a social science research question and identify a research method that is appropriate to the question.
- Critically evaluate proposed and completed research that uses the methods examined in the course.
- Demonstrate a familiarity with key topics in the emerging field of computational social science.

Examination and grading

Grades range from A to F/Fx and are based on how well the student has achieved the intended learning outcomes. The learning outcomes are assessed as follows:

Two article reviews (6 ECTS ESSx, E-A, or F/Fx)

Students must complete two short reviews (800-1200 words each) of articles assigned to the seminar meetings. Detailed instructions will follow, but students will be expected to answer a version of Maurice Zeitlin's *The Four Questions*. The four questions are:

1. What does the author want to know? (Or what's the work's 'central question'?)
2. Why? So what? (Or what's the work's intellectual rationale?)
3. What's the author's answer or argument? (Or, what's the work's general theory and corresponding substantive theory?)
4. How does the author go about finding out if the answer is wrong or not? (Or what's the method and how is it used?)

The article reviews must be submitted through lisam by noon on the Tuesday after each method is introduced. The due dates are:

22 Sept:	observational data.
29 Sept:	case studies.
6 Oct:	experiments.
13 Oct:	simulations.

Students who are not satisfied with a grade will be able to complete an additional article review to replace the grade on a completed article review. If the deadlines for all the article reviews have passed, the student will receive a failing grade on the assignment. There will be two re-examination opportunities after the end of the course during which students will be able to submit one or more article reviews based on new articles chosen by the instructor.

Six course journal entries (1.5 ECTS ASSx, pass/fail)

Students must complete six of a possible seven "journal entries" based on questions or instructions that will be provided after each lecture. Each assignment will be relatively simple and require only a short written response. (Sometimes only a few sentences, never more than a page.)

The journal entries must be submitted through lisam by noon on the Tuesday following a lecture. The due dates and topics for each journal entry are as follows:

25 Aug:	research questions.
1 Sept:	revised research questions.
8 Sept:	case selection.
22 Sept:	questions about observational data.
29 Sept:	questions about case studies.
6 Oct:	questions about experiments.
13 Oct:	simulation questions and review.

Students who fail to complete the journal entries will be permitted to complete an additional article review to replace the journal entry component of the final grade.

A note on plagiarism

Plagiarism will not be tolerated. Although students are encouraged to help their peers and ask their peers for help, all written assignments must be completed separately and must be the original work of the individual student. Copying directly from one another or from written sources is not permitted. All cases of suspected plagiarism will be reported immediately to the university disciplinary board. Punishments for plagiarism can be severe and may jeopardize your standing as a student in the program.

Course literature

Textbooks

- Martin, J. L. 2017. *Thinking through Methods: A Social Science Primer*. Chicago: University of Chicago Press.
- Salganik, M. 2018. *Bit by Bit: Social Research for the Digital Age*. Princeton: Princeton University Press. Available online at: <https://www.bitbybitbook.com/>
- Schelling, T. C. 2006. *Micromotives and Macrobehavior*. New York: W. W. Norton.

Scientific articles and other resources: see below for each lecture and seminar.

Course schedule and reading assignments

All readings should be completed prior to the lecture or seminar. Some minor additional readings may be added as needed.

Introduction and preliminaries

Wednesday 19 August: Lecture (Jacob Habinek) 10:15-12:00 (online), Seminar 13:15-14:30 (online).

- Martin, J. L. 2017. "Sharpen your tools." Chapter 1 in *Thinking through Methods: A Social Science Primer*. Chicago University Press.
- Salganik, M. 2018. "Introduction." Chapter 1 in *Bit by Bit: Social Research for the Digital Age*. Princeton University Press. Available online at: <https://www.bitbybitbook.com/en/1sted/introduction/>
- Keuschnigg, M. et al. 2017. "Analytical sociology and computational social science" *Journal of Computational Social Science* 1(1): 3–14.

Asking a social scientific question

Wednesday 26 August: Lecture (Jacob Habinek) 10:15-12:00 (online), Seminar 13:15-14:30 (K3).

- Martin, J. L. 2017. "How to formulate a research question." Chapter 2 in *Thinking through Methods: A Social Science Primer*. Chicago University Press.
- Ermakoff, I. 2017. "Shadow plays: theory's perennial challenges." *Sociological Theory* 35(2): 128-137.
- Hedström, P. & P. Ylikoski. 2010. "Causal mechanisms in the social sciences". *Annual Review of Sociology* 36: 49–67.
- Coleman, J. S. 1986. "Social theory, social research, and a theory of action." *American Journal of Sociology* 91:1309-1335.

Answering a social scientific question

Friday 4 September: Lecture (Jacob Habinek) 10:15-12:00 (online), Seminar 13:15-14:30 (K3).

- Martin, J. L. 2017. "Choosing a site." Chapter 3 in *Thinking through Methods: A Social Science Primer*. Chicago University Press.

- Wu, L., et al. 2019. "Large teams develop and small teams disrupt science and technology." *Nature* 566: 378–382.
- Woodward, James. 2010. "Data, phenomena, signal, noise." *Philosophy of Science* 77(5): 792–803. Sections 1 to 5 only.
- Hillmann, H. 2008. "Mediation in multiple networks: elite mobilization before the English Civil War." *American Sociological Review* 73(3): 426–454.

Optional skills workshop t.b.d. (Research ethics? Writing for social science?)

Friday 11 September: Seminar (Jacob Habinek) 10:15-12:00 (online).

Observational data

Wednesday 16 September: Lecture (Jacob Habinek) 10:15-12:00 (online), Seminar 13:15-14:30 (K3).

- Breiman, L. 2001. "Statistical modeling: the two cultures." *Statistical Science* 16(3): 199–215.
- Martin, J. L. 2017. "Dealing with documents." Chapter 8 in *Thinking through Methods: A Social Science Primer*. Chicago University Press.
- Salganik, M. 2018. "Observing behavior." Chapter 2 in *Bit by Bit: Social Research for the Digital Age*. Princeton University Press. Available online at: <https://www.bitbybitbook.com/en/1st-ed/observing-behavior/>
- Wimmer, A., & Lewis, K. 2010. "Beyond and below racial homophily: ERG models of a friendship network documented on facebook." *American Journal of Sociology* 116(2): 583–642.
- **Review article:** Bail, C. A., et al. 2019. "Prestige, proximity, and prejudice: the diffusion of Google search terms across 199 countries, 2004-2014." *American Journal of Sociology* 124(5): 1496–1548.

Case studies

Wednesday 23 September: Lecture (Petri Ylikoski) 10:15-12:00 (online), Seminar 13:15-14:30 (K3).

- Collier, D. 2011. "Understanding process tracing." *PS: Political Science & Politics* 44(4): 823–30.
- Vaughan, D. 2004. "Theorizing disaster: analogy, historical ethnography, and the *Challenger* accident." *Ethnography* 5(3): 315–47.
- Ylikoski, P. 2019. "Mechanism-based theorizing and generalization from case studies." *Studies in the History and Philosophy of the Science Part A* 78: 14–22.
- **Review article:** Kozlowski, A., et al. 2019. "The geometry of culture: analyzing the meaning of class through word embeddings." *American Sociological Review* 84(5): 905–949.

Experiments

Wednesday 30 September: Lecture (Marc Keuschnigg) 10:15-12:00 (online), Seminar 13:15-14:30 (K3).

- Shadish, W., et al. 2002. "Experiments and generalized causal inference." Chapter 1 in *Experimental and Quasiexperimental Designs for Generalized Causal Inference*. Houghton Mifflin.
- Jackson, M., & D. Cox. 2013. "The Principles of Experimental Design and Their Application in Sociology." *Annual Review of Sociology* 39:27–49.
- Salganik, M. 2018. "Running experiments." Chapter 4 in *Bit by Bit: Social Research for the Digital Age*. Princeton University Press. Available online at: <https://www.bitbybitbook.com/en/1st-ed/running-experiments/>
- Van de Rijt, A., S. Kang, M. Restivo, A. Patil. 2014. "Field Experiments of Success-Breeds-Success Dynamics." *PNAS* 111:6934–6939.
- **Review article:** Van de Rijt, A. 2019. Self-Correcting Dynamics in Social Influence Processes. *American Journal of Sociology* 124(5): 1468–95.

Simulations

Wednesday 7 October: Lecture (Eduardo Tapia) 10:15-12:00 (online), Seminar 13:15-14:30 (K3).

- Schelling, T. C. 2006. "Micromotives and macrobehavior" and "Sorting and mixing: race and sex." Chapters 1 and 4 in *Micromotives and Macrobehavior*. W. W. Norton.
- Epstein, J. M. 1999. "Agent-based computational models and generative social science." *Complexity* 4(5): 41–60.
- Page, S. 2015. "What sociologist should know about complexity." *Annual Review of Sociology* 41: 21–41.
- Centola, D. & Macy, M. 2007. "Complex contagions and the weakness of long ties". *American Journal of Sociology* 113(3): 702–734.
- **Review article:** Goldberg, A., & Stein, S. K. 2018. "Beyond social contagion: associative diffusion and the emergence of cultural variation." *American Sociological Review* 83(5): 897–932.

Computational social science

Wednesday 14 October: Lecture (Etienne Ollion) 10:15-12:00 (online), 13:15-14:30 (K3).

- Groves, R. 2011. "Three eras of survey research." *Public Opinion Quarterly* 75(5): 861–871.
- Lazer, D. et al. 2009. "Computational social science." *Science* 323(5915): 721–723.
- Mützel, S. 2015. "Facing big data: making sociology relevant." *Big Data & Society*, 2(2): 1–4.
- Stumpf, M. P. H., & M. A. Porter. 2012. "Critical truths about power laws." *Science* 335(6069): 665–666.

Summary of schedule

Week	Date	Time(s)	Location	Item	Topic	
Week 34	Wednesday	19-Aug-20	10:15-12:00	Online	Lecture	Intro
			13:15-14:30	Online	Seminar	Intro
Week 35	Tuesday	25-Aug-20	12:00	DEADLINE	Journal	Research q's
	Wednesday	26-Aug-20	10:15-12:00	Online	Lecture	Asking q's
Week 36	Tuesday	1-Sep-20	12:00	DEADLINE	Journal	Research q's
			13:15-14:30	K3	Seminar	Asking q's
			10:15-12:00	Online	Lecture	Answering q's
Week 37	Friday	4-Sep-20	13:15-14:30	K3	Seminar	Answering q's
			12:00	DEADLINE	Journal	Case selection
			10:15-12:00	Online	Workshop	t.b.d.
Week 38	Wednesday	16-Sep-20	10:15-12:00	Online	Lecture	Obs. data
			13:15-14:30	K3	Seminar	Obs. data
Week 39	Tuesday	22-Sep-20	12:00	DEADLINE	Journal/review	Obs. data
			10:15-12:00	Online	Lecture	Case studies
			13:15-14:30	K3	Seminar	Case studies
Week 40	Wednesday	29-Sep-20	12:00	DEADLINE	Journal/review	Case studies
			10:15-12:00	Online	Lecture	Experiments
			13:15-14:30	K3	Seminar	Experiments
Week 41	Tuesday	6-Oct-20	12:00	DEADLINE	Journal/review	Experiments
			10:15-12:00	Online	Lecture	Simulations
			13:15-14:30	K3	Seminar	Simulations
Week 42	Wednesday	13-Oct-20	12:00	DEADLINE	Journal/review	Simulations
			10:15-12:00	Online	Lecture	CSS
			13:15-14:30	K3	Seminar	CSS
Week 43					Nothing!	