



Course Code: 3240

Social Studies of Science

Spring 2025

Tue 4:30 to 6:15, ELB LT2

Prof Siqi HAN

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Office Location: Sino 416

Office Hour: By Appointment

Teaching Assistants:

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Office Hour: Tue 10:00 am -12:00 pm

Course Description: In the past decades, the world witnessed a sea change in the influence that scientific knowledge has in shaping the course of our economy and culture. From the development of Covid-19 vaccine to the revolutionary Chat GPT, ours is a society organized around and even controlled by expert knowledge systems. Meanwhile, science itself also underwent increasingly fiercer attack by outsiders, a typical example being the disagreement on whether the climate change is real. Social Studies of Science offer us a set of tools to understanding and analyzing these heatedly debated big questions in society today. By critically analyzing science, scientists, and the system of knowledge production that they created and maintained, this course surveys major topics and recent developments in the social studies of science. We first consider the major theoretical contributions in social studies of science, covering classics by Merton, Latour and Gieryn. We then turn to the series of topic related to the STEM pipeline, namely, who studies STEM majors, who works in the related occupations, and who succeeds in science. Next, we turn to the discussion of topics related to data, platforms, and the new economy, especially how workers today survive in the increasingly data-driven and unequal economy. And lastly, we round up the course with the discussion on science's role in national development, using China-US tech war as an example, and that on the legitimacy crisis of science.

Textbook: *The Science Studies Reader. 1999. Biagioli, Mario.(eds)*

Optional:

digitalSTS: A Field Guide for Science & Technology Studies. Princeton University Press, 2019. Vertesi, Janet, and David Ribes. (eds.)

The science of science. Cambridge University Press, 2021. Wang, Dashun, and Albert-László Barabási. , 1st Edition

Course Objectives:

At the completion of this course, students will be able to:

1. get familiar with major theoretical approaches in sociology of science and sociology of knowledge
2. understand what is a novel discovery in science, what defines a science discipline and what is interdisciplinarity
3. understand different forms of stratification in STEM pipeline, such as gender, race and global inequalities in becoming a star scientist / most innovative research team
4. critically reflect on the knowledge-based, skill-driven economy, with an emphasis on understanding the labor process in the gig economy and other data-intensive industrial sectors (ie. software programming, AI)
5. critically reflect on the public mistrust in science during global crises, such as global warming and the Covid-19 pandemic

Grade Distribution:

Participation	25 %
Mid Term Multiple Choices Exam	35 %
Final Project	40%

Letter Grade Descriptors:

A: Outstanding performance on all learning outcomes

A-: Generally outstanding performance on all (or almost all) learning outcomes.

B+, B, and B-: Substantial performance on all learning outcomes, OR high performance on some learning outcomes which compensates for less satisfactory performance on others, resulting in overall substantial performance.

C: Satisfactory performance on the majority of learning outcomes, possibly with a few weaknesses.

D: Barely satisfactory performance on a number of learning outcomes.

F: Failed the course.

Course Policies:

- **Attendance**

The instructor will conduct UReply surveys to collect attendance data in weeks she randomly chooses. She will take at least five times of attendance, and give 5 levels of grades: 25% (no missing), 20% (one missing), 15% (two missing), 10% (three missing), and 5% (four missing).

- **Mid Term Exam**

The instructor will distribute a 20-question, close-book, mid-term exam. The exam will take the time of a normal lecture and will be in-class on **Feb 25th**. Most of the questions are

single-answer questions that cover the contents in the first half of the semester. If it has more than one answer, the question will specify that directly.

- **Final Project: AI-Assisted Thinking Log**

For the final assignment of this course, students are required to submit a "Thinking Log" alongside their AI-assisted essay, on a chosen topic that the instructor will specify in the second half of the semester.

The purpose of the thinking log is to document how they guided the AI and modified the AI's output. It takes the form of a Q & A conversation with an English-based chatbot available online (i.e., ChatGPT, Microsoft Co-Pilot, Poe, and the like). Students will ask the AI 5-10 questions, no more than 10 questions, and based on the answers from the AI, write the essay. DOWNLOAD this conversation from the chatbot (part I of this final project) and it will be your log. This part will be graded on whether students are able to ask good questions in limited attempts, so that the AI is best utilized. This part takes up 15% of the overall grade.

With these conversations with the AI, the students would have enough materials and understanding of the topic that they need for the essay (part II of this final project). **The essay will be written by the students, not the AI. So be aware of** just duplicating your essay by copying the exact AI answers - with the log, the graders will see that you have exactly the same texts and give you a fail. **Your essay needs to critically reflect and re-organize what the AI offered in the log.** This essay will be no longer than 600 words. References are not included in the word count. This part takes up 25% of the overall grade.

Your log and essay will be uploaded to veriguide to check originality, and you will need to upload the veriguide scanning report to blackboard together with your essay.

The essay is due 2 weeks after the distributed date (last lecture), **on April 29th, at 11:59 pm.** Late Submission For every additional day of delay, there is half a grade down from your assignment score. For example, if you fail to submit it two days after the specified deadline, the assignment will be downgraded from B+ to B-. Half a day delay is considered a full day delay.

General University Policies:

Please refer to CUHK's academic honesty policy: <https://www.cuhk.edu.hk/policy/academichonesty/>

and newest policy regarding the use of Chat GPT: https://www.aqs.cuhk.edu.hk/documents/A-guide-for-students_use-of-AI-tools.pdf

Course Outline:

Week	Content
Week 1 1/7	Introduction <ul style="list-style-type: none"> • Is Science social, and why should sociologists care?
Week 2 1/14	Institutional Sociologies of Science (I Classical Theories) <ul style="list-style-type: none"> • Merton "The Normative Structure of Science" • Merton "Matthew Effect in Science" • Merton "Priorities in Scientific Discovery"
Week 3 1/21	Institutional Sociologies of Science (II The Modern Take) <ul style="list-style-type: none"> • Kleinman and Vallas "Science, capitalism, and the rise of the knowledge worker" • Han "Staying in STEM or changing course: Do natives and immigrants pursue the path of least resistance?"
Week 4 2/4	Cultural Sociologies of Science (I) <ul style="list-style-type: none"> • Latour "Give Me a Laboratory and I Will Raise the World" • Latour "One More Turn After the Social Turn" • (optional) Chapters in Latour "We Have Never Been Modern"
Week 5 2/11	Cultural Sociologies of Science (II) <ul style="list-style-type: none"> • Gieryn "Boundary-Work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists" • Gieryn "Home to Roost: Science Wars as Boundary Work"
Week 6 2/18	The STEM Pipeline <ul style="list-style-type: none"> • Bian et al. "Gender stereotypes about intellectual ability emerge early and influence children's interests" • Morgan et al. "Socioeconomic roots of academic faculty" • Tutorial 1: Discussion on the STEM pipeline and women in science
Week 7 2/25	Mid-Term Exam
Reading Week 3/4	No Class
Week 8 3/11	Women in Science <ul style="list-style-type: none"> • Fox Keller. "The Gender/Science System: or , Is Sex to Gender as Nature Is to Science" • Haraway. "A manifesto for cyborgs - science, technology, and socialist feminism"

Week	Content
Week 9 3/18	Disciplines and Interdisciplinarity <ul style="list-style-type: none"> • Khun "The Structure of Scientific Revolutions" • Bourdieu. "The Specificity of the Scientific Field and the Social Conditions of the Progress of Reason." • (optional) Lamont. "How professors think"
Week 10 3/25	Novelty and the Citation Networks Approach <ul style="list-style-type: none"> • Xu et al. "Flat teams drive scientific innovation." • Selected Chapters in Wang and Barabasi, "The science of science" • Tutorial 2: More on Science of science
Week 11 4/1	Workers in the Tech Industry <ul style="list-style-type: none"> • Neely, Tobias and Williams. "Social Inequality in High Tech: how gender race and ethnicity structure the world's most powerful industry" • Hossfeld. "Their Logic against Them. Contradictions in Sex, Race, and Class in Silicon Valley"
Week 12 4/8	Science, Modernization, and National Development <ul style="list-style-type: none"> • The Guardian. "China's War Chest: How the fight for semiconductors reveals the outlines of a future conflict" • Gauchat. "The Legitimacy of Science" • (Optional) Xie, Yu, Chunni Zhang, and Qing Lai. "China's rise as a major contributor to science and technology." PNAS 111, no. 26 (2014): 9437-9442.
Week 13 4/15	Semester Wrap-Up and Q and A for Final Project