The Course

This course provides an introduction to the interdisciplinary study of science, medicine, and technology. Beginning early in the twentieth century, sociologists, historians, philosophers, and anthropologists engaged in a consistent set of inquiries posing original, interesting, and consequential questions about the sciences. Their works drew on and responded to each other, and, taken together, their various approaches constituted a field, which in the 1970s came to be called “science studies.” This course furnishes an initial guide to this field. Students will not only encounter some of its principal concepts, approaches, and findings, and see how they have developed over time and in context. They will also get a chance to apply science-studies perspectives themselves, by performing a fieldwork project. Among the topics we will examine include: the sociology of scientific knowledge and its applications; actor-network theories of science; constructivism and the history of science; and efforts to apply science-studies approaches beyond the sciences themselves.

Required Readings

Members are expected to provide themselves with the following texts, which should be available at the Seminary Co-op:


Other readings are listed below. Those with a double asterisk (**) are compulsory; others are helpful but not absolutely required. These readings should be available either on e-reserve or in the ‘Library Reserves’ section of the course’s Canvas site. From time to time, depending on how class discussions go, we may add new readings via the Canvas site.
Course Requirements

DISCUSSIONS AND QUESTIONS

Meetings take place every week on Wednesdays at 9:30-12:20 in Haskell Hall M102.

Students are expected to read and reflect on the assigned readings before class, to attend each class, and to participate in class discussion. Students are also required to develop a short, one- to two-paragraph document proposing one or more discussion questions before each class. You should upload this to the relevant section of the Canvas site (probably ‘Discussions’) by 5pm on the Tuesday evening prior to each Wednesday session. This document should pose a question or questions that you feel would be useful to address in class. It should not summarize the text’s own argument except in so far as this is necessary to convey your point.

For example, a submission might look like this:

In “The Normative Structure of Science,” Merton states that “The ethos of science is that affectively toned complex of values and norms which is held to be binding on the man of science. The norms… are in varying degrees internalized by the scientist, thus fashioning his scientific conscience or, if one prefers the latter-day phrase, his super-ego.” What exactly does this mean? Are norms attitudes, morals, rules or means; are they held by every scientist, “average” scientists, exemplary scientists, or only those who share “the goal and the methods” of science Merton describes? How do they differ from the norms of comparable nonscientists (e.g., engineers, lawyers)?

These submissions are visible to all participants in the course. This is by design: the idea is that an online ‘conversation’ in parallel with the classroom sessions may develop as we proceed. The Canvas site should give participants the opportunity to reply to posts, thus creating threads on particular topics. We encourage you all to use this facility – it is not a requirement, but everyone may find it helpful.

TERM PAPER

Students will be expected to produce a final project. This should be a roughly 20-page (double-spaced) research paper that engages with issues raised by the course, and which includes an empirical component. The empirical component might include observation of a research or discourse setting; interviews; the shadowing of a particular researcher; or an archival project. Instructors will help devise possible research tropics. Several distinct primary sources should be used in your analysis (e.g., a research articles, notebooks, commentary or instruments from the time period of investigation). Essays should have a guiding organization and deploy signposting (e.g., an introduction with a roadmap and conclusion) and standard referencing.

Students should have prepared by November 6 1 a one-page (600-word) “pitch” that describes their chosen topics and the broad arguments they expect to make. They will briefly present this in class, giving an account of their questions/arguments, the significance of these in the context of course readings, and the resources they mean to use to address them. Final papers/exhibits must be turned in no later than December 13. We understand that this is a later deadline than is conventional for classes of this kind, but we want students to have time to develop their work after course readings have been completed. They may, of course, be turned in earlier.
Final grades are constituted as follows:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Class participation and reading questions</td>
<td>20%</td>
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<tr>
<td>Term paper</td>
<td>80%</td>
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**Calendar**

1. **October 2.  Introduction to the Course**

At this initial meeting we shall simply introduce the themes of the class, the syllabus, and ourselves. There is no need to have done any reading before the meeting.

2. **Oct. 9.  The Crisis of the Mid-Twentieth Century and the Beginnings of the Modern Study of Science**

The origins of “science studies” arguably lie in the 1930s. The rise of totalitarian states in Germany – one of the world’s most sophisticated scientific nations – Soviet Russia and Japan led to profound questioning of the nature of science itself and its relation to society. Writers from a variety of disciplines felt an urgent necessity to tackle this problem. Their efforts inaugurated a continuing interdisciplinary endeavor to understand the institution of science in the modern world in all its aspects.


3. **Oct. 16.  The Structure of Scientific Revolutions**

Postwar studies of science took many forms – some of which we are only now restoring to view – but perhaps the dominant current was epistemological. According to philosophers of the
“logical empiricist” or analytical schools, science was best characterized in terms of a formal logic by which observations were refined into theories, which could then be tested or subjected to falsification. Theory choice was rational and justifiable – that was what made science special. All of this was cast into question by Thomas Kuhn’s *Structure of Scientific Revolutions*, which by insisting that scientific knowledge was a historical product through-and-through made it possible to ask many different kinds of questions about science and its practices.

** Kuhn, T.S. 1963 *The Structure of Scientific Revolutions*. Try to read as much of this short but profound book as you can.

### 4 Oct 23. The Sociology of Scientific Knowledge

Toward the end of the 1960s, in the wake of Kuhn’s work and also the upheavals of the Vietnam War era, a number of social thinkers took up the argument that a sociology of science should not rest content (as Merton’s had) with analyzing scientific institutions, but should instead aspire to analyse scientific knowledge. The resulting field of “Sociology of Scientific Knowledge” (SSK for short) inherited perspectives from a long-neglected work by Polish immunologist – and concentration camp survivor – Ludwik Fleck. It is often characterized in terms of two “schools,” those of Edinburgh (represented by David Bloor’s “strong programme”) and Bath (represented by Harry Collins’s Empirical Programme of Relativism). We shall look at both here.


### 5 Oct 30. Actors, Networks, Boundaries, and Translations

During the 1970s and 1980s, SSK came under critique from the champions of a rival approach that castigated its perspectives as localist and asymmetrical. This approach – which came to be known as Actor-Network Theory – took inspiration from French anthropology and anti-reductionist philosophy. Its major advocate in science studies was Bruno Latour, whose *Science in Action* purported to invite the curious to understand science and technology by simply “following scientists around” in their everyday activities. ANT introduced a whole new lexicon of terms and concepts, which have proved extraordinarily influential in the study of the sciences in the modern world.

Nov 6. Places and Thresholds: The Laboratory

**NB: 600 word research “pitch” due in class **

One aspect that ANT and SSK shared was a recognition that the place of science mattered. That is, scientific practices need to be understood as taking place in settings that have particular conventions, norms, and rules; not everyone can enter, and when they do they need to act in prescribed ways. The focus of this recognition has long been the place invented for scientific work: the laboratory. A tradition has accordingly grown up of work that attends closely to laboratories, asking what they are, how they evolve, how their nature affects the work that is done in them, and how that work can then be transferred to different places with their own customs.


Nov 13. Credibility and Civility in the Sciences

Experimental science being a localized activity, only a few researchers can typically observe a given effect directly. Everyone else has to rely on some kind of report or testimony. Practical science is therefore inevitably a matter of trust, because it relies on witnessing. But how do scientists – and the broader publics – decide whom to trust, and to what degree? How do they question witnesses? In matters of original research this can be a real, complex issue, and scientific communities in practice draw on a range of resources to resolve it. Accordingly, some practitioners of science studies focus on this issue of trust and its social constitution as a way of understanding how knowledge is accredited and sustained. There is a history of the conventions involved, too, so authors like Mario Biagioli have looked to the history of “civility” to understand how scientific manners arose.
8 Nov. 20. Questions of Standpoint: Gender, Race, and Other Identities

At the same time as SSK and its counterparts were developing, critical perspectives on science and technology were also being devised with issues of gender and race at their core. These drew attention to the partial perspectives associated with the particular privileged standpoints inhabited by scientists (traditionally white, male, Western, and middle-class), while the relativistic convictions associated with post-Kuhnian science studies allowed for such critics to call for new kinds of science itself to ameliorate such partiality. In more recent iterations, writers like Donna Haraway have developed radical new philosophies of “situated knowledges” to propose ways beyond the standpoint problem.


9 Nov. 27. No meeting – Thanksgiving Week

This being the day before Thanksgiving, we shall not hold a class session.


For this final session we want to discuss some of the latest work in science studies. The topic will remain open until some time in the middle of the quarter, so that we can design a session to suit the interests and needs of students (and emerging work in the field too). One possibility is to look at the ways in which science studies practitioners have grappled with the world of “the digital” – with algorithms, networks, and online credibility. Sources for that could include the
titles listed here. This is a placeholder, however; we anticipate defining the topic and sources properly in the course of the quarter.


