

# HISTORY & SOCIOLOGY OF SCIENCE (HSSC)

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## HSSC 5008 Current Issues in Science & Technology Studies

A graduate-level reading seminar in STS, this course will survey major themes and readings as well as recent work in STS.

Fall

1 Course Unit

## HSSC 5020 Public History

Public history, long marginalized and stigmatized in the scholarly world, is undergoing rehabilitation. The continuing, prodigious public demand for history in various media and manifestations, together with many historians' desire for greater relevance and the persistently disappointing academic job market for new Ph.Ds., has reawakened interest in public history within the academy. This seminar examines the many varieties of public history while giving students hands-on experience, focusing on museums and historic sites.

Not Offered Every Year

1 Course Unit

## HSSC 5050 Seminar in the History and Sociology of Science

Seminar for first-year graduate students, undergraduate majors, and advanced undergraduates. Reading will introduce the student to current work concerning the effect of social context on science, technology, and medicine.

Fall

1 Course Unit

## HSSC 5100 READING SEM STS

This course will review major developments in biomolecular sciences and Many historians of science, technology and medicine have embraced the study of popular culture in recent years. They have drawn on a rich literature in mainstream history, on the history of reading, of the book, of museums, of oral culture, journalism, theater, and of the mass media including radio and television. Some have even proposed that popular culture provides insights into elite knowledge systems that are not accessible in other kinds of sources, thus privileging what is publicly known over the traditional private textual, visual and material records of the archive or museum. In this graduate research seminar we will be exploring the relevance of the study of popular culture to the history of science, technology and medicine. Participants will write an original research paper in which they draw on popular culture as a resource for the interpretation of practices, theories and material resources in natural knowledge systems. Readings will generally focus on surveys that explicitly discuss methods, though we will also read some primary sources possibly including science fiction texts, memoirs of patients, engineers, physicians and scientists, gee-whiz popular science books, and didactic books intended for children.

Fall or Spring

1 Course Unit

## HSSC 5108 Knowledge in Motion

This course provides a broad, interdisciplinary introduction to the movement of knowledge across space and time. In particular, we will be focusing on the economic models of knowledge movement, on comparative and trans-cultural views on science, on translation, and finally, on the global turn in the history of science. Since the movement of knowledge is inseparable from the production of knowledge, we will also start our discussion by looking back at some of the literature that constitutes the intellectual foundations of the history and sociology of science.

Not Offered Every Year

1 Course Unit

## HSSC 5181 BOTANIC EMPIRE: Plants and Colonialism 1700 to 1950

Tea, rubber, cinchona, sugar and myriad other plants that have and continue to shape our contemporary world have been moved, altered and exploited by modern empires. With the rise of new forms of Biopiracy, older connections between plants and imperialism are being rethought not just academically but in multiple new practical, commercial and political arenas. Looking back from this contemporary vantage point, this course will explore the sites, sciences and instruments through which plants and empire came to be so intimately entangled. Topics shall range from the histories of botanic gardens to botanic illustrations and agricultural experimental stations to botanic horror fiction.

Not Offered Every Year

1 Course Unit

## HSSC 5199 Other Reasons

This course seeks to destabilize a monolithic vision of science as a singular, homogenous body of knowledge by revisiting its plural, heterogeneous histories. This course is particularly interested in exploring the historical entanglements between the sciences and the enchanted world of intangible entities such as spirits, ghosts and gods. The course will look at the theoretical critiques of "Enlightenment Rationality" and "Science" in post colonial theory; at a detailed and loosely chronological examination of the multifaceted entanglements of science and technology with the paranormal in the 19th and 20th centuries; and at the performative aspects of scientific rationality in colonial and postcolonial contexts in a bid to understand the background that led to postcolonial theorization.

Not Offered Every Year

1 Course Unit

## HSSC 5203 Periodization and Science

Who invented the Scientific Revolution? Does the term "modern science" tell us about the subject under discussion, how we should evaluate that subject, or something else? How are historical periodization and the historiography of science related? This course will explore the concept of historical epochs, or periods, and the role of science and technology in defining historical epochs (and vice-versa). Readings will be taken from philosophy of history, history and philosophy of science, STS, classical studies, and history of art.

Not Offered Every Year

1 Course Unit

**HSSC 5207 Readings in Race & Science**

What accounts for the persistence and resilience of racial conceptions in science? In this course we will look for answers to this and other questions by examining the historiography of race, colonialism, and science. The standard historiography has focused on the rise and fall of racial typologies in the north Atlantic and their contributions to troublesome political projects such as the Atlantic slave trade, Jim Crow policies, the eugenics movement, and the Holocaust. More recent histories have taken inspiration from postcolonial studies, standpoint theories, and indigenous studies to insist on a more global reckoning of race and science. If we focus on the southern hemisphere, for instance, we can see scientific racial conceptions enrolled for a different though not necessarily less innocent set of projects: the dispossession of indigenous lands and effacement of indigenous peoples, the glorification of race-mixing as a tool of nation building, and the cultivation of whiteness as a means to modernity. By examining classic and recent approaches to race and science we will grapple with the following questions: Is 'race' a product of 18th century French and English science? Or can we find earlier iterations in the idioms of conquest of Spanish America during the early modern period? Do the standard narratives concerning the history of racial conceptions in science change when looked at from the frame of the global south? Does race get 'buried alive' after WWII? And do recent developments in human genomics bring "race" back from the dead, albeit in an anti-racist form?

Fall

1 Course Unit

**HSSC 5251 Darwin and Evolution: New Perspectives**

In this graduate reading seminar, we consider evolution as a cluster of sometimes mismatched theories about nature and time, a political resource in emerging debates about human difference and social order, and a theological conundrum that persists into the twenty-first century. We consider primary source materials by Lamarck, Chambers, Darwin, Wallace, Mayr, and other naturalists; and explore the contexts of their production and their meanings through the work of scholars including Browne, Secord, Keller, Richards (both Robert and Eveleen), Smocovitis, Graham and many others. Our goal is to develop new perspectives on "the Darwin Industry" and think critically about how to move the field forward drawing on the most exciting new scholarly work in this area.

Fall or Spring

1 Course Unit

**HSSC 5288 Gender and Science**

With a special focus on methods, this course explores the rich literature on gender and technical knowledge.

Not Offered Every Year

1 Course Unit

**HSSC 5300 Current Issues in the History of Medicine**

This seminar surveys a variety of popular and scholarly approaches to the study of medicine and its history, ranging from traditional physician-centered narratives to more recent cultural and epistemological methodologies. The potential values of journalistic, sociological, anthropological, geographical and other approaches to the historical study of health, disease, and health care will be explored.

Not Offered Every Year

1 Course Unit

**HSSC 5400 Reading Seminar in History of Science**

Survey of major themes and figures in the history of western science, technology, and medicine since the Renaissance, through reading and discussion of selected primary and secondary sources. Topics include: Kepler, Galileo, Bacon, Newtonianism, Pasteur, the Industrial Revolution, the rise of German science, etc. Concurrent attendance at STSC 1 lectures is recommended.

Fall

1 Course Unit

**HSSC 5588 Disability: History and Theory**

Disability is the "next academic frontier," argues historian Douglas Baynton, "an analytic category with the transformative potential of race, class, sexuality, and gender." The purpose of this course will be explore recent literature on the history and theory of disability, focusing primarily on the history of physical disability. Throughout the semester, we will approach this literature with an eye to how disability studies relates to the fields of the history of science, medicine, and technology. Topics will include: the sociology of deviance, the medical vs. social model of disability, chronic illness and disease, genetics and disability, the role of disability in health care policy, as well as the politics of design and assistive technologies.

Not Offered Every Year

1 Course Unit

**HSSC 5640 History of Technology**

In this course we read influential classic and recent works in the history and the philosophy of technology, tackling the ways in which the fields are analytically structured as well as their relation to each other. We also discuss approaches and methodological questions in general history and general philosophy. We start with Karl Marx, arguably the most influential historian and philosopher of technology of the modern era, and discuss him in relation to what has been one of the most visible debates in the historiography of technology - the question of technological determinism. We then travel in a roughly chronological order through key periods and methodological issues in the fields. During our journey we encounter the Middle Ages and historical theoreticians of the Annales School, the early modern period and questions about gender and microhistory, and the so-called Industrial Revolution and the questions it raises about what's modern about modern technology. Mid-way through the class, we discuss two classics in the philosophy of technology, Martin Heidegger and Jürgen Habermas, who grapple precisely with the question about the modern element in industrial technology. As we enter the nineteenth and twentieth centuries, we expand our methodological horizon to include examples from the cultural history of technology and applications of the social constructivism debate to the history of technology. We end the class with works on the recently emerging fields of biotechnology and nanotechnology and with a set of monographs written in the nascent sub-discipline in the history and philosophy of technology, engineering studies.

Not Offered Every Year

1 Course Unit

**HSSC 5662 Seminar in American Architecture: Philadelphia: Urban Experience & Public Memory**

This seminar will challenge students to encounter and interpret the city around around them in unconventional ways. At a time when public commemoration has vigorously and sometimes violently re-entered our country's public discourse, we wish to re-examine how monuments, memory, politics, and our senses shape our understandings of Philadelphia's past, present, and possible futures. Our focus is on two intertwined themes: How we remember and What we remember. Treating monuments, films, and historical texts as key forms of interpretation - the building blocks of an official if unstable "public past," we will likewise attend to the "backdrop" of such written and built statements: everyday urban and domestic life as well as more public histories that have remained silent or risen to the surface at key moments.

Spring

1 Course Unit

**HSSC 5687 Minds and Machines**

There is a plaque at Dartmouth College that reads: "In this building during the summer of 1956 John McCarthy (Dartmouth College), Marvin L. Minsky (MIT), Nathaniel Rochester (IBM), and Claude Shannon (Bell Laboratories) conducted the Dartmouth Summer Research Project on Artificial Intelligence as a research discipline to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it." The plaque was hung in 2006, in conjunction with a conference commemorating the 50th anniversary of the Summer Research Project, and it enshrines the standard myth that Artificial Intelligence was born in 1955 when these veterans of early military computing applied to the Rockefeller Foundation for a summer grant to fund the workshop that in turn shaped the field. However, like so many myths, this one obfuscates the long-entangled histories that have come together in contemporary Artificial Intelligence research - including histories of labor, histories of automation, histories of intelligence, histories of mathematics, and histories of technology. This course surveys the historical scholarship that has investigated the intersections of minds and machines.

Not Offered Every Year

1 Course Unit

**HSSC 5707 Gender and Technical Knowledge**

In this graduate reading seminar, we explore how technical knowledge systems have historically intersected with identity and social order. The materials emphasize gender, but our discussions and readings will also engage at times with disability, race, class and other social categories that have shaped participation in technical endeavors and been the focus of technical study. Our goal is to understand how embodiment and expertise intersect. We will explore why certain kinds of people have been understood to be unreliable knowers, pathologically embodied, untrustworthy, or dangerously linked to emotion, incompetence or confusion, while other kinds of people have been socially marked as embodying reliability, trustworthiness, or epistemological neutrality. These embodiments bear on the historical development of technical knowledge as a social system for the establishment of consensus about the nature of reliable truth. They are also relevant at many different levels to embodied social experiences of scientific information, personal health, reproduction and everyday technology. This course will give students the tools and insights needed to draw on feminist/gender/queer theory when it is useful to their research. That is the purpose of all of our readings. We begin with an exploration of some key ideas in feminist scholarship of the last few decades. Then we turn to three broad, interconnected queries, relating to the social organization of science, technology and medicine (who has been excluded, who favored? What kinds of work have been understood to belong to different kinds of people?); to the intellectual content of expertise (how have experts made technical sense of social and bodily difference? How have technologies expressed and performed gender?); and to the philosophical debate about the nature of technical knowledge, particularly science, as a fundamentally gendered (masculine) endeavor which privileges hierarchical explanations in ways that mimic the social order.

Not Offered Every Year

1 Course Unit

**HSSC 5757 Industrial and Post Industrial Ages**

In this course we are concerned with phenomena surrounding industrialization and de-industrialization, and with post-industrial types of technologies and labor. We start with recent reconceptualizations of the archetypal British "Industrial Revolution" and its close relations to Indian industry and economy, move to the US American South as an example of a global agricultural economy in the industrial age, take North American and Western Europe as lenses for transitions from industrial to post-industrial eras, and discuss the nuclear and computer age of the Cold War from a number of perspectives: the Global South and cybernetics, medicine and isotopes, the recent climate debate and underlying computing, an anthropology of post-industrial labor, and gene-patenting and biological manufacturing in the twenty-first century.

Not Offered Every Year

1 Course Unit

**HSSC 5800 Environmental History**

A survey of recent and influential works in environmental history, including works from both within and outside the American environmental history canon. The focus is on situating emerging historiographical trends within the long-term development of the field and in relation to other closely allied fields, including the history of science, technology, and medicine, social and cultural history, urban history, agricultural history, world history, historical ecology, environmental anthropology, and ecocriticism.

Not Offered Every Year

1 Course Unit

**HSSC 5888 Humanities Beyond the Human**

The humanities are once again influx as scholars experiment with a variety of new techniques and conceptual frameworks. In recent years many of these experiments have involved turning away from longstanding questions of representation, language, epistemology, and human exceptionalism and toward questions of enactment, materiality, ontology, and the nonhuman. In this seminar we will examine a variety of manifestations of this turn as they have emerged in history, anthropology, literary studies, and philosophy under names such as new materialism, multi-naturalism, big/deep history, multispecies ethnography, and object-oriented ontology. We will try to situate these recent turns in longer intellectual genealogies, drawing especially on works in science studies and the history of science that seek to provide contingent, situated accounts of what exists and what we can know about it. Objects of inquiry will include dogs, mushrooms, cyborgs, seeds, mosquitoes, bacteria, stones, jugs, pictures, hormone disruptors, and the cosmos.

Not Offered Every Year

1 Course Unit

**HSSC 6097 Feminist STS As Theory, Method, Practice: Relations And Their Limits**

Drawing from historical, anthropological, and ethnographic texts, this course draws from core readings in feminist theory and feminist STS as well as from decolonial and postcolonial perspectives. We will examine feminist ethnographic, historical, and science studies approaches to science, knowledge production, and governance. Course readings will be organized around themes or cases and key questions will include the politics and limits of relation as an organizing analytical, methodological, and political concept.

Not Offered Every Year

1 Course Unit

**HSSC 6100 Research Seminar in History of Human Sciences**

This concentrated research seminar provides graduate students with time, support, and space to hone their writing skills. Thematically, the seminar closely examines historiographic trends within the history of human sciences - namely the stylistic, methodological, and investigative strategies adopted by prize-winning articles in the field. By carefully dissecting the architecture of these articles, our aim is to identify models that we can use in our own scholarly endeavors and to draft an article with these in mind. Accordingly, a significant portion of the course is devoted to examining archival and primary source resources in the region, to discussing research strategies, and to workshopping our work-in-progress. Students can use the course to significantly revise an already written paper or to draft a new paper. The course's overarching purpose is to create the scaffolding necessary for students to produce a substantial research paper in the history of human sciences (broadly conceived) that is potentially publishable as a journal article.

Fall or Spring

1 Course Unit

**HSSC 6188 Cold War Science**

In this research seminar we will work through some of the literature on the history of science, technology and medicine in the Cold War and explore together relevant archival collections in the Philadelphia region, and digital collections online (particularly oral histories but other sources as well). All history begins with the availability of sources though we want to think creatively about what counts as a source (for example buildings, landscapes, artifacts, museum displays, film, other visual sources).

Not Offered Every Year

1 Course Unit

**HSSC 6199 Other Reasons**

Postcolonial Theories, building largely on Frankfurt School theorists, have critiqued the totalizing aspirations of what it calls 'Enlightenment Rationality'. Such critiques have also fed a range of critiques of Science. At the heart of such critiques is a rather restricted and plastic idea of Science as a singular, homogenous body of knowledge that has steadily promoted the disenchantment of the world. In this course we seek to destabilize this monolithic vision of science by revisiting its plural, heterogeneous histories. The course is particularly interested in exploring the historical entanglements between the sciences and the enchanted world of intangible entities such as spirits, ghosts and gods. The course will be divided into three broad sections. The first will deal with the theoretical critiques of 'Enlightenment Rationality' and 'Science' in postcolonial theory. The second will undertake a detailed and loosely chronological examination of the multifaceted entanglements of science and technology with the paranormal in the 19th and 20th centuries. Finally, the last section will explore the performative aspects of scientific rationality in colonial and postcolonial contexts in a bid to understand the background that led to the postcolonial theorization.

1 Course Unit

**HSSC 6247 Experience and Experiment**

This course will examine the role of sensory knowledge relative to the creation of scientific knowledge, and to the creation of "scientific knowledge" as a category of knowledge. We will consider the entangled histories of proof, trial, and observation in conjunction with histories of particular and accumulated experience. How can singular phenomena be understood as illustrative of a universal law? How do experience and experiment fit into hierarchies or taxonomies of knowledge at different times, and in different cosmologies? Whose experience or experimentation is authoritative, and what makes it so? Readings will include theoretical and historical perspectives, as well as such topics as medieval and early modern optics and astral science, artisanal knowledge, and exploration.

Fall or Spring

1 Course Unit

**HSSC 6288 Capitalism: Theorizing economy in sci & med**

What are the relationships between capitalism and the practice and experience of medicine? How have historians and anthropologists theorized capitalism and political economy in accounts of health and medicine? What do such theories account for and what is foreclosed? This research seminar examines theories of capitalism as they are taken up in historical and ethnographic accounts of science, health, healing, and medicine. Exploring how contemporary and classic accounts have sought to analyze and unpack the relationship between economy and health, we will examine how political economic approaches to health and medicine have informed historical and ethnographic accounts of health and illness – asking, for instance, how theories of neoliberalism have been used to explain health inequalities (and vice versa) – and will analyze how scholars have linked practices of financialization, speculation, and investment to changing dynamics of health, medicine, healing, and the generation of medical knowledge. Course time will also be devoted to independent research through which students will develop and write up a research paper on an area of interest related to the course theme.

Not Offered Every Year

1 Course Unit

**HSSC 6299 Genetics and Genomics**

This course is called "Genetics and Genomics," but we are defining those terms broadly to potentially encompass historical studies of biomedicine, evolution, race theory, biological anthropology, reproduction, agriculture, animal breeding, psychiatry, social sciences, and so on. We are thinking about knowledges of embodiment and what they teach us about social and technical order—about systems, institutions, technologies, hierarchies, theories, practices, networks, and so on. The goal of the semester will be for each student to produce a first draft of a publishable research paper. Many of our readings are calibrated to complement the available archival collections at the American Philosophical Library, the University of Pennsylvania archives, the Academy of Natural History collections, the Chemical Heritage Foundation, Wagner Free Institute of Science, College of Physicians of Philadelphia, Hagley Museum and Library, and collections held in striking distance of Philadelphia, in New York, Princeton, Baltimore, and Washington DC. While APS will be a special of focus of attention, given the remarkable collections there, students should make a special effort to become familiar with the many other resources that are available in the region, some of which have not been the focus of significant historical attention.

Fall or Spring

1 Course Unit

**HSSC 6500 Research Seminar in the History of Medicine**

This course is focused on comparing and contrasting ethnographic and historical approaches to health and medicine. We will engage ethnographic and historical approaches to health and medicine to explore the methodological, empirical, and theoretical stakes of thinking medicine, disease, and the body across and within disciplines. Taking a methodological and comparative approach, the course will explore ethnographic and historical approaches to such themes as the body, disease, pharmaceuticals, and biomedical knowledge-production in global and historical context. We aim to develop skills and knowledge for critically reading anthropological, historical, and sociological literatures on medicine, the body, and disease. As such, students will develop a research project, which may be in either the history or anthropology of medicine and/or science, or a project, which combines such approaches, utilizing the comparative and methodological frameworks of the course to develop an original analysis on a topic of their choosing.

Not Offered Every Year

1 Course Unit

**HSSC 6517 The Lazaretto, the City, and the World: Public Health, Immigration, and Urban Growth, 18th-21st C.**

Philadelphia's Lazaretto quarantine station was built in 1799 to protect the city after a series of catastrophic yellow fever epidemics. In its time, the Lazaretto was a gateway through which goods and people from many regions of the world passed before entering Philadelphia (sometimes after temporary detention). This course uses the Lazaretto as a gateway to the history of American public health, immigration, and urban growth. Our exploration of those histories is not limited to events that happened at the Lazaretto, nor to the period of its quarantine operations (1801-1895), nor even to Philadelphia, but rather uses the very local and very human stories of this unusual site as a point of entry into larger American and global stories. Coursework includes site visits to the Lazaretto and to a variety of local partner institutions, including the Historical Society of Pennsylvania, the Mutter Museum, Puentes de Salud, and Sayre Health Center. Students undertake extensive research projects covering some combination of the course's themes, including discussions of how historical interpretation can facilitate and enhance public engagement and activism.

Spring

1 Course Unit

**HSSC 6700 Research Seminar in History of Technology**

This graduate seminar provides a structured environment in which each student executes an independent research project. Early class meetings focus on the craft of researching and writing scholarly articles. Later meetings are devoted to discussion of students progress on their research projects. Each student defines their own research topic in the history of technology, subject to the Professor's approval.

Fall or Spring

1 Course Unit

**HSSC 9999 Graduate Independent Study**

Available to doctoral students only.

Fall or Spring

1-4 Course Units