

# Science, Technology, and Society

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The program for Science and Technology Studies at Brown operates under the premise that students and scholars in the field of science and technology studies want to know how scientific knowledge is produced. STS believes that the idealized accounts of knowledge production entrenched in our scientific belief system are inadequate, given the complexity of the process they claim to describe.

STS scholars seek to understand how science operates by analyzing historical case studies, observing contemporary scientists at work, examining representations of scientific ideas in textbooks or journals, and studying the infrastructure of scientific institutions.

This interdisciplinary field brings together anthropologists, philosophers, historians, art historians, literary theorists, sociologists and practicing scientists and technologists. In addition to offering an undergraduate concentration program in Science and Society, Brown also offers interdisciplinary courses under the same rubric.

For more information on STS at Brown, please visit: <https://www.brown.edu/academics/science-and-technology-studies/>

## Science, Technology, and Society Concentration Requirements

Science, Technology, and Society (STS, formerly Science and Society) is an interdisciplinary concentration that examines the processes of scientific discovery and the establishment of scientific policies and systems of belief from historical, philosophical, anthropological, and sociological perspectives. Concentrators analyze the practices, norms, and values that reflect and shape our deepest convictions about what is considered "science." Students select courses in the physical sciences, life sciences, or mathematics and choose a thematic track that may include the history and philosophy of science; gender and science; race, science and ethnicity; health and medicine; environment and society; or they may create their own independent focus. STS prepares students to follow, guide, and shape scientific knowledge as it travels from the laboratory into the public arena.

### Requirements

Consisting of 12 courses, the program of study outlined below will be developed by each student in consultation with the concentration advisor. Where appropriate, independent reading, lab courses or GISPS may count for up to three of the twelve total courses. Students will take a minimum of 7 intermediate to advanced courses.

### Required Courses (2)

The concentration has two required courses.

- STS 1000 : Introduction to Science and Society: Theories and Controversies, or equivalent introductory course: usually taken in the second or third year.
- STS 1900 : Senior Seminar in Science and Society, also open to non-majors with the proper background, usually taken senior year.

### Thematic Track (3)

Students will organize their course of study around the choice of a thematic track. The theme may be thought of as the applied content portion of the concentration. Students will take a minimum of three courses, at least one of which must be at an advanced level, in one of the thematic areas listed below:

- History & Philosophy of Science
- Gender & Science
- Race, Science & Ethnicity
- Health & Medicine
- Representing Science in Literature & Culture
- Policy, Persuasion & the Rhetoric of Science

- Environment & Society
- Independent Focus

### Science Track (4)

Students will take a minimum of four courses in one of the following scientific areas: physical sciences, life sciences, mathematics/computer science. The chosen area should provide appropriate background and support for the chosen concentration theme. The science courses will be sequenced such that a concentrator will move enough beyond the introductory level to gain some understanding of the world view of scientists within a chosen field. The particular sequence of courses which best meets the science requirement will be chosen in consultation with the concentration advisor. When necessary, the concentration advisor will seek guidance from faculty within the chosen scientific field.

### Science and Technology Studies Theory (3)

Students will take three Science and Technology Studies-related courses in the social sciences and humanities. These courses, which will provide critical theoretical background for the study of Science and Society, should address questions of historiography, epistemology and methodology in the field of science and technology studies. A full list of such courses and sample concentrations may be found at <https://www.brown.edu/academics/science-and-technology-studies/>

### Honors

To qualify for Honors a student must:

- Be in good standing
- Have completed at least two thirds of the concentration requirements by the application deadline
- Have earned a majority of "A" grades in the concentration. Classes taken S/NC will count as qualifying towards that majority if they are marked "S with distinction" or are accompanied by a Course Performance Report ([https://ask.brown.edu/performance\\_reports/](https://ask.brown.edu/performance_reports/)) indicating that had the student taken the course for a grade, the grade would have been an "A."

## Courses

### STS 0050. Science Fictions: The Misuse of Science in Public Life.

People on all sides of the political spectrum distort or spin science to advance their own economic, policy, religious or other goals. The phenomenon is obvious today but it is not new, and it is visible on both the right and the left. In this seminar we consider what science is and how it works, how people learn about it, why they are vulnerable to spin about it (and how to avoid being spun) and how spin plays out with subjects like climate change, medicine, diet, the teaching of evolution, sex education, pollution and other issues.

### STS 0192N. Self-Help, Science, and the Pursuit of Happiness.

If you work hard enough, you can be anything you want to be." This course examines self-help culture and techniques of self-making, such as dieting and positive thinking. From the writings of Benjamin Franklin to television makeover shows, self-help discourse has proven central to U.S. culture and politics. Where does self-help culture come from, who does it serve, and what types of social relations does it authorize? How did scientists become the moral authorities on happiness and the good life? Taking a historical perspective and aided by scholarship in fat studies, disability studies, science studies, and Black feminism, we will answer these questions by analyzing a variety of cultural texts. We will explore together how self-help culture produces difference along the lines of class, gender, race, and disability. We will ponder when self-help is compatible with social justice.

**STS 0400. The Phoenix and the Hummingbird: Natural History from Antiquity to Evolution.**

Scientists love to solve mysteries. From philosophers of antiquity to contemporary citizen naturalists, study of nature has focused on the creatures that have most puzzled humankind. These have inspired natural histories: encompassing studies covering everything that could be known about an animal—from what it symbolized and how it behaved to its place in the natural order. By looking at issues of truth and its relationship to myth, direct experience, and nature's systematization, this seminar provides an introduction to the history of science through what naturalists have written about the more mystifying creatures in the natural world.

**STS 0700B. Science and Social Controversy.**

In this course we examine the institution of science and its relations to the social context in which it is embedded. Scientific objectivity, scientific consensus, scientific authority, and the social and moral accountability of scientists will be considered in the context of discussing such controversies as: the AIDS epidemic, climate change, science and religion, the Manhattan Project, the Tuskegee Syphilis Experiment, genetic and pharmacological enhancement, the role of drug companies in science and medicine, psychiatric diagnosis and medication, robotics, and the implications of neuroscience for free will and moral responsibility. Enrollment limited to 20 first year students and sophomores.

**STS 0701. Dirty Computer: Race, Queerness, and Science Fiction.**

What do representations of robots and cyborgs in popular film, sci-fi literature, and music tell us about gender, sexuality, race, and what it means to be "human?" Using queer of color critique, feminist theory, disability studies, and science and technology studies (STS), we will investigate the ways that science fiction's disruption of race, gender, and sexuality as stable categories offers radical models for our present and possible futures. Our case examples explore the politics of the body through narratives of artificial intelligence, sex work, urbanism and segregation, biotech research, prosthetics and athleticism, new reproductive technologies, and more. We will engage with poetry, film, visual art, and speculative fiction to explore how bodies are dreamed, crafted, and represented as these works re-imagine bodily and social estrangement in the present through the creation of counter-futures.

Fall STS0701 S01 16892 Th 4:00-6:30(04) (X. Chacko)

**STS 0702. Invisible Labor in the Making of Science.**

Invisible Labor in the Making of Science is about the people who are concealed, eclipsed, or anonymized in accounts of scientific research. Many scientific workers—including translators, activists, archivists, technicians, curators, and ethics review boards—are absent in publications and omitted from stories of discovery. Professional scientists are often celebrated, yet they are expected to uphold principles of 'objective' self-denial. This course will explore these silences and omissions to reveal how invisibilities have shaped twentieth and twenty-first century science. The course modules invites comparisons across geographic, temporal, and disciplinary boundaries. The modules also facilitate different forms of self-reflexive practice, and will open the possibilities of research avenues for students; how we should approach research and narrative method; and how contemporary interest in invisible labor relates to established discursive traditions in the historiography of science and STS.

**STS 0770. Stories of Nature.**

What is nature? Are humans part of it or outside it? How has this boundary diverged over time and space, and how has it been expressed? This seminar tackles these questions by exploring stories of nature from various epistemic traditions. Through ten case studies, we will investigate how the human-nonhuman boundary has been expressed through storytelling in creation myths, natural histories, fiction and journalistic writing, documentaries, and artistic creations. Methodologically, we will survey how scholars have reflected on this boundary from the history of science, animal studies and indigenous studies, while learning to write stories of nature of our own.

**STS 1000. Introduction to Science, Technology and Society.**

What is "science"? How do scientific ideas become knowledge? What is the nature of scientific objectivity, how can it be compromised? What is a scientific community, scientific consensus, and scientific authority? What roles does science play in our culture, and how is science related to other social institutions and practices? The interdisciplinary field of science studies is introduced through exploration of topics that include: gender and race, psychiatric classification, the drug industry, science and religion, and the use of nuclear weapons during World War II. Enrollment limited to 30 sophomores, juniors, seniors; others may enroll with permission of instructor.

**STS 1100. Botanizing Worlds.**

What can plants tell us about the human condition, and more broadly about the rapidly changing conditions on Earth? In recent years, scholars, writers, and artists have been calling for new ways to address "plant blindness"; finally, it appears that plants are having a moment. Plants are crucial to the survival of human life. From the food we eat, to the air we breathe, the clothes we wear, plant bodies are used to build homes, cure our ailments, and feed our addictions. Putting plants to use is tantamount to survival but this course aims for a less extractive relationship with plants. This course explores what we might gain by learning from plants—to know them, think with them, and attune our senses to their liveliness. Raising fundamental questions about human-plant relations to reconsider what it means to be human?

Spr STS1100 S01 25482 TTh 2:30-3:50(11) (X. Chacko)

**STS 1400. Disability, Coloniality, Decoloniality.**

This course takes a multidisciplinary approach to disability justice, history, art, and activism. We will situate the social and medical models of the disabled, sick, and fat body within institutions of empire—such as the plantation, camp, and penitentiary) to examine how disability and other forms of bodily difference become scripted within liberal humanism. In doing so, we recast familiar debates in Postcolonial and Decolonial Studies on topics such as sovereignty, ecological extraction, and global capitalism through a Critical Disability Studies lens. Exploring historical and literary texts, films, poetry, embodied performances, and other aesthetic objects, we will identify how shifting formations of colonial and scientific knowledges reverberate onto our contemporary understandings and lived experiences of bodily difference as they are scaffolded through race-gender-labor relations.

**STS 1500. The Science Beat: Writing from a Warming Planet.**

In a time of widespread distrust of expertise and institutions, what role can science communicators play in cultivating a better-informed public? With a special focus on covering the climate crisis, this course will equip students to clearly and effectively communicate scientific concepts to a general audience through nonfiction writing. We'll start with the fundamentals of interviewing, news writing, and journalistic ethics, then move on to narrative techniques that will stretch students to develop their personal voices as storytellers. Students will be encouraged to bring their own experience to the page, since great science writing can provide what we look for in all literature—a sense of connection with others. This is a reading and writing intensive course; in addition to their own reporting, students will read—and reflect critically on—science storytelling in a variety of styles and formats.

**STS 1700A. Disability and Sexuality: Politics of Desire and Desirability.**

Disabled people have been variously understood as undesirable, as subjects who do not desire, or as people whose desire is dangerous and perverse. In this course, we will excavate the origins of these understandings and develop new ones through a "cripping" of sexuality. The "normalization" of disabled sexuality through disciplinary regimes, and the ways disabled people have challenged them, will be a central theme. The course will utilize texts from both queer theory and disability studies, understanding the ways disabled sexuality pushes against normative expectations of proper sexuality. From the eugenic logic controlling the reproduction of the "feeble-minded"; to discourses of consent and agency surrounding intellectual disabilities; to interdependency, care, and disabled intimacies; to queer crip theories of kink, we will take disability as a crucial lens into the constitution of modern understandings of "sexuality" itself.

**STS 1700B. Race, War, and Medicine.**

This course explores the historical and contemporary relationship between three prominent pillars of our daily lives: race, war, and medicine. How did each influence the development of the other, and through this process construct modern societies?

We will examine the role played by medical practitioners and military personnel in the creation of social and racial hierarchies that in turn abetted the appropriation of land and the extraction of labor. We will begin in the seventeenth century and predominantly track the history of modern Western imperialist powers, especially the US. Nonetheless, an important priority of the course is to de-center imperial and top-down narratives, and the scholarship we engage with reflects that goal.

**STS 1700C. Science and Technology Policy in the Global South.**

Junior-senior seminar exploring the relationships among science, technology, society, and public policymaking in the Global South. Exemplar countries are South Africa, Brazil, India, and China. Biotech, nanotech, public health, environment, and science training policies are among those closely examined. Three writing assignments, plus electronic conversations with counterparts in the Global South.

**STS 1700D. Gathering Hope: Stories for Earthly Survival.**

Human actions have had irreversible changes at a planetary level including in the composition of the atmosphere, land, and oceans, the climate, the rapid extinctions of life, and an increase in the prevalence of toxic chemicals. The history of colonialism, enslavement, and plantations are also intertwined in ruin of the environment. Feminist science studies provide a guide to the arts of noticing and staying with the troubles of our time but also for imagining otherwise. In this course we gather hope from ecofeminism in order to move towards a justice-oriented future. We do this by delving into the literature on ecofeminism alongside ecological speculative fiction. Recognizing that solutions to environmental problems require a feminist attunement, we can start to understand the implications that our ethical commitments have to the future of life on the planet.

Spr STS1700D S01 25330 W 3:00-5:30(10) (X. Chacko)

**STS 1700E. The Sounds of Science: Nonfiction Audio Storytelling.**

In this course, we will use narrative nonfiction storytelling to try to get at the layers beneath popular science stories. Our medium will be audio, and the course will equip students with the tools and skills to develop their story ideas in ways that take advantage of the unique intimacy of sound. While audio is not a great medium for communicating numbers and statistics, it excels at the complexities of character and feeling. That's where we will focus our storytelling energies. In the spirit of inquiry, we will produce narratives that offer more questions than answers. Students will learn the fundamentals of field recording, interviewing, story structure, writing for the ear, audio editing, sound design, and scoring.

**STS 1700F. Visualizing the Invisible: Art, Science and Observation.**

DINOSAURS, wilting plants, Jupiter's moons and disembodied wombs— over the last few hundred years, thinkers have engaged with interdisciplinary methods across the arts and sciences in representing objects that have evaded the human eye. From anatomical theaters to observatories, natural history museums, labs, and rainforests, people have struggled with the politics and poetics of visualizing and communicating “invisible” objects – things that were too far away, too small, too ephemeral, too dead, or otherwise hidden from human sight. Asking how scientists and artists were trained to see, we will study the history of observation from the early modern period to the present. This class will include workshops at the Haffenreffer Museum of Anthropology, the Nature Lab, and RISD's glass studios. Students need not have any hands-on experience in the arts or sciences, but we will practice both in class.

**STS 1700N. Race, Science, and Society: Genomics and Beyond.**

Why are drugs being marketed as racial saviors? What does biotechnology have to do with race? This course introduces students to interdisciplinary approaches to the study of race in science and society as an integrated natural and social scientific endeavor. Using a team-based pedagogy, interdisciplinary groups of natural and social science concentrators will explore real-world problems like validating knowledge about racial difference, the relationship between politics and science, and the newest findings in such scientific fields as anthropology, epidemiology, and cognitive science. Enrollment limited to 20. S/NC

**STS 1700P. Neuroethics.**

In this course, we will examine ethical, social, and philosophical issues raised by developments in the neurosciences. Topics will include: neurodevelopment and the emergence of persons; the impact of child abuse on brain development; aging, brain disease, and mental decline; life extension research; strategies and technologies for enhancement of human traits; “mind-reading” technologies; agency, autonomy, and excuse from responsibility; error and bias in memory; mind control; neuroscientific and evolutionary models of religious belief and moral judgement. Enrollment limited to 20. Instructor permission required.

**STS 1700R. Bodies at Work: Disability and Capitalism.**

If disability has been defined as the inability to work, then an exploration of disability necessitates an exploration of capitalism. Workplaces literally injure and disable bodies, while changing arrangements of labor define and redefine what makes something a disability, requiring new tasks of bodies at work. This course traces the dynamic relationship between bodies and economies over the course of American history from the birth of industrial management science in the nineteenth century, to the “essential worker” of the COVID-19 pandemic. Nimble moving back and forth between disability studies and labor history, we will develop the conceptual tools to understand capitalism through the lens of disability, while also generating new ways to think about disability via critical histories of capitalism. We will also look at how disabled people have pushed back, envisioning new ways of valuing bodies beyond productivity.

**STS 1700S. Crippling Technoscience: Disability, Knowledge, (Re)Invention.**

Just as disabled people have re-appropriated the term “crip” for their own political empowerment, so too has technoscience been both a means of oppression and transformation in disabled people's lives. In this course, we will examine this tension. The social model of disability has long pointed out that inaccessible infrastructures and technologies literally “disable” bodies. Yet, disabled people are not just passive recipients; they also use technology for their own ends. In addition to our focus on technology, we will also look at knowledge and chronic illness: how science becomes both a tool for control and for activism. With the United States as our (general) focus, our exploration will intersect with themes such as race, sexuality, gender, and the nation-state.

**STS 1700T. Race, Gender, and Technology in Everyday Life.**

Using examples from everyday life, this course investigates how preferences for certain technologies are shaped by social arrangements that reflect power relations. By considering the origins, materiality, and practices of use for a diverse range of technologies, from the digital to the reproductive, this course will interrogate the socio-political and ethical fallout of consumer, infrastructural, personal, legal, and medical technologies. Reading about the history and anthropology of technology, watching films that engage the reception and making of science and technology, and imagining the future of technological solutions, this course analyzes how technologies are used to create and maintain boundaries around social categories of race, nation, sex, gender, and ability.

**STS 1700V. The Changing Arctic Environment: Science, Society and Politics.**

The Arctic has become a lens through which to understand the world. An unstable Arctic poses threats not only to the future of the Arctic but the world itself. This seminar will explore the Arctic as a region and the challenges it faces due to climate change, the rising conflicts over its vast mineral reserves, and the competing interests within the nations. The course is intended for students who are interested in Science, Technology and Society, Environmental Studies, Environmental Policy, and International Relations. There are no prerequisites for this class.

**STS 1700W. Eating and the Politics of Wellness.**

This course examines the construction of liberal humanism, gender, and transnational American empire by way of the stomach. Together we will analyze case studies of wellness foods and technologies to trace metaphors of eating, metabolics, and food-as-fuel through 20th century dietetics and industrial food production. Examining histories of diets and dieting, the foods created and circulated via U.S. militarism, and the impact of eugenics/Progressive era nutrition reform on our modern global food system, we will map the affective, material, and aesthetic afterlives of empire on the gut. Reading a collection of historical texts, visual media, and scientific journals, students are asked to think capaciously about the mundane act of eating and the benign concept of wellness.

**STS 1701C. The First Scientific Americans: Exploring Nature in Latin America, 1500-1800.**

Who were the “first scientists” in the Americas?, what exactly do we mean by “science” in this context?, and what has amounted to “America” in the past? Focusing on present-day Latin America, this seminar analyses the links between the exploration of the New World and scientific discovery in the early modern period. We will explore issues of primacy (why have both empires and scientists cared about “arriving first”); the nature of science (what kind of knowledge has been considered “scientific” in different periods); and locality in knowledge production (was there something special about the New World in fostering scientific thinking).

**STS 1701Q. The Fate of the Coast.**

This seminar focuses on what happens when science, politics and money intersect in a highly contested venue, in this case, the coast; the nation’s most beloved and highly valued landscape. These issues form the heart of this seminar. Though the course will focus on the saltwater coasts of the contiguous 48 United States, it will also discuss the fate of low-lying island nations and other countries vulnerable to sea level rise; engineering efforts around the world to cope with the problem; and legal issues relating to climate refugees here and abroad, driven from their homes by rising seas.

**STS 1705. The Medium(s) of Animation: Plasticity, Labor, Technology.**

It is by no means a coincidence that early animators such as Émile Cohl, Winsor McCay and the Fleischer brothers brought to life scientific theories of evolution and neuropathology in their pioneering experiments. Beginning with the birth of animation as an industrial art form, this course will focus your attention on the technical mediums in which biological plasticity became an object of scientific knowledge, aesthetic experience, and political governance. While learning about a range of animation forms and techniques in their historical contexts, we will think deeply about the thrills and terrors of our own plasticity made suddenly perceptible through transformative encounters with new media technologies.

**STS 1900. Senior Seminar in Science, Technology and Society.**

This is an advanced seminar that uses a Problem Based Learning style pedagogy to explore real-world problems in STS. To solve assigned problems students will want to explore critical scholarship in areas *such* as laboratory studies, feminist science and technology studies, the rhetoric and discourse of science and technology, expertise and the public understanding of science. Course is intended for Science and Society senior concentrators, but is open to others with appropriate background. Enrollment limited to 20.

Fall STS1900 S01 16768 W 3:00-5:30(10) (X. Chacko)

**STS 1970. Independent Study in Science and Society.**

Independent reading and research work in Science and Society is available to students who have completed introductory and intermediate level work in Science and Society. A decision to enroll must be made via consultation with the concentration advisor and the faculty advisor for the course. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Prerequisite: STS 1400. Open to junior and senior concentrators in Science and Society; instructor permission required.

**STS 1971. Independent Study in Science and Society.**

Independent reading and research work in Science and Society is available to students who have completed introductory and intermediate level work in Science and Society. A decision to enroll must be made via consultation with the concentration advisor and the faculty advisor for the course. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Prerequisite: STS 1400. Open to junior and senior concentrators in Science and Society; instructor permission required.

**STS 2000A. Naturecultures: Speculative Futures in Environmental Justice.**

The stories we tell about the world open the possibilities of certain futures, while foreclosing other imaginable ones. This course reveals how Western historical, theoretical, and scientific ways of knowing (epistemology) understood/understands both women and nature as inferior and thus needing to be controlled. Pushing back against the ideas of any inherent binary separations between men/women or nature/culture, we will examine ecofeminism as a theoretical location within both feminist and environmental philosophies and as a social movement. Learning from the intertwined history of environment and gender, that have led to both personal and global inequity and disaster, we will also engage solutions that imagine different futures. Recognising that solutions to environmental problems require a feminist attunement, we can start to understand the implications that our ethical commitments have to the future of life on the planet.

**STS XLIST. Science, Technology, and Society XLIST.**