HISTORY OF SCIENCE AND TECHNOLOGY

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The Department of the History of Science and Technology offers an undergraduate program leading to the degree of Bachelor of Arts with a major in science, medicine, and technology, and a graduate program leading to the degree of Doctor of Philosophy.

Undergraduate Programs

The department offers a variety of courses that deal with the history of the conceptual and technical development of the sciences, as well as the cultural and social impact of science and technology on civilization. These courses are open to all undergraduates in the Schools of Arts and Sciences and Engineering. A few of the courses require some background in an appropriate science, but most are accessible to those with no specialized knowledge who want to understand the part science has played in shaping modern culture. Students who have concerns about their technical competence for a given course should consult the professor involved.

Programs

- History of Science and Technology, PhD (https://e-catalogue.jhu.edu/arts-sciences/full-time-residential-programs/degree-programs/history-science-technology/history-science-technology-phd/)
- History of Science, Medicine, and Technology, Bachelor of Arts (https://e-catalogue.jhu.edu/arts-sciences/full-time-residential-programs/degree-programs/history-science-technology/history-science-medicine-technology-bachelor-arts/

Courses

AS.140.105. History of Medicine. 3 Credits.
Course provides an introduction to health and healing in the ancient world, the Middle Ages, and the Renaissance. Topics include religion and medicine; medicine in the Islamicate world; women and healing; patients and practitioners.

AS.140.106. History of Modern Medicine. 3 Credits.
The history of medicine and public health from the Enlightenment to the present, with emphasis on ideas, science, practices, practitioners, and institutions, and the relationship of these to the broad social context.

AS.140.178. History of Biology. 3 Credits.
The course surveys the emergence and development of life sciences since the 1700s. It examines major ideas, approaches, and debates regarding life, along with their material and cultural underpinnings as well as social impacts. One crucial question throughout the course is how social and cultural contexts have shaped views of life at particular times and places. Topics include natural history, classification, morphology, cell theory, physiology, evolution, genetics and eugenics, molecular biology, biomedicine, and biotechnology. Lectures are supplemented with discussions about primary historical texts and scholarly articles. Students will learn about the course content, methods in historical inquiries of scientific fields, and will develop an original research essay as a final project.

AS.140.198. Technology and Environment in Japanese Films and Anime. 1 Credit.
In the course of the semester we will watch Japanese films and animation that touch upon topics of technology and environment. The list of screenings includes several blockbusters, classics in film studies, and documentaries. The course is a companion course to 140.398 "Godzilla and Fukushima," but is also open to anyone interested. Students who do not take 140.398 will be required to write a short review paper by the end of the semester.

AS.140.227. Race, Racism and Medicine. 3 Credits.
How can we think about the interconnections between racism, theories of race and the practice of medicine? Living at a moment when racial disparities in health outcomes in the United States are still very stark, this course will provide a historically grounded approach to thinking about the roles that race and racism have played in healthcare, the production of health disparities as well as the role of medicine in the development of racist thought. While much of this course will focus geographically within the United States, this class will also explore global histories of medicine, encountering questions of race and medicine in Africa, the South Pacific and Asia. In addition to the analysis of primary source documents and historical texts, students will also be introduced to theoretical approaches to the study of race and racism from W.E.B. DuBois, Sylvia Wynter, Frantz Fanon and others.
Area: Writing Intensive

AS.140.228. Epidemic!: Diseases that Shaped our World. 3 Credits.
In this course, we will look at a number of key epidemic diseases in the pre-modern and modern world, from Black Death to COVID-19, and investigate how it affected medical thought and practice, as well as political, social and economic lives. We will pay special attention to how these diseases spread and how they affected and were influenced by questions of race, gender, sexuality and colonialism.
AS.140.231. Health & Society in Latin America & the Caribbean. 3 Credits.
Medical practice is complex in Latin America and the Caribbean. Most countries in the region have universal healthcare; yet, the quality of clinical services varies widely, and is influenced by degrees of incorporation into—or marginalization from—social power structures. Many people take their health into their own hands by supplementing biomedicine with plant based remedies as well as religious and spiritual services. This course will interrogate the history and contemporary relevance of healthcare in Latin America and the Caribbean, with particular interest in how medicine intersects with colonialism, slavery, capitalism, neo-colonialism, grassroots revolutionary movements, the Cold War, and neoliberalism. Drawing on films, visual and performance art, and music, students will consider the ways in which race, gender, indigeneity, ability, class, and nation have affected people’s experiences with medical practice. Informed by postcolonial and decolonial scholarship, we will also examine why Latin America and the Caribbean have become “laboratories” for the production of medical knowledge, and importantly, how that knowledge was created by indigenous, enslaved, and migrant people as well as professionals. Finally, we seek to understand individual health problems in relation to the social and political determinants of health. As such, the course prompts students to reflect on why healthcare professionals—in the United States and abroad—would benefit from historically-informed communication with patients and their communities. This is a discussion-based seminar that requires active participation. There are no exams. The course does not assume any previous knowledge of the history of medicine or Latin American history.
Area: Writing Intensive

AS.140.232. Food, Environment, and Society. 3 Credits.
A seminar discussing crucial events and processes in global history which have shaped how food production and consumption impacted the environment and human societies. Students will learn how food practices, originally bounded within certain places and cultures, became transformed in modern societies with the rise of modern agricultural, transportation and food processing technologies, as well as the public health and environmental consequences of these transformations. Sessions will include lectures, seminar discussions, field visits or guest speaker events, and some hands-on activities. For the final project, students will conduct original research on topics of interest and produce a multi-media, public-facing intellectual product.
Area: Writing Intensive

AS.140.245. Biology and Society in Asia. 3 Credits.
What major knowledge traditions about life's generation and function have taken shape in Asia that continue to shape our contemporary world? How have they fared in encounters with Western knowledge traditions? How have modern biology, biotechnology and biomedicine developed in Asia in recent years within distinct geopolitical contexts? This course addresses these questions with selected historical cases from China, India, Japan, Koreas and selected Southeast Asian countries. It first introduces concepts and frameworks of major non-Western knowledge systems about life such as yin-yang and five phases and examine how religions, politics, and cross-cultural encounters impacted these systems, their evolutions or replacements. Then the class will examine the political, material, cultural and institutional contexts of more recent development in the life sciences in Asia. Class activities include lectures, discussions, research seminars, a final research project, and possible conversations with visiting professors and field trips.

AS.140.301. History of Science: Antiquity To Renaissance. 3 Credits.
The first part of a three-part survey of the history of science. This course deals with the origins, practice, ideas, and cultural role of scientific thought in Graeco-Roman, Arabic/Islamic, and Medieval Latin/Christian societies. Interactions across cultures and among science, art, technology, and theology are highlighted.
Area: Writing Intensive

AS.140.302. Rise Of Modern Science. 3 Credits.
Survey of major scientific developments from the mid-18th century to the present.

AS.140.306. Science And Religion. 3 Credits.
Science and religion are crucial influences on Western culture. This course examines their interrelations during the past 2000 years, including the Athens-Jerusalem debate, medieval theology, the Galileo affair, evolution, and current issues.

AS.140.312. The Politics of Science in America. 3 Credits.
This course examines the relations of the scientific and technical enterprise and government in the United States in the 20th and 21st centuries. Topics will include the funding of research and development, public health, national defense, etc. Case studies will include the 1918 Spanish influenza epidemic, the Depression-era Science Advisory Board, the founding of the National Science Foundation and the National Institutes of Health, the institution of the President’s Science Advisor, the failure of the Superconducting Super collider, the Hubble Space Telescope, the covid pandemic, etc.

AS.140.316. Minds and Machines. 3 Credits.
Is the mind identical to the brain? Is the mind (or brain) a computer? Could a computer reason, have emotions, or be ethically culpable? How have computers changed our minds? This course examines such questions philosophically and historically. Topics include early AI research, computationalism, connectionism, 4EA cognitive science, simulation theory, and the Singularity.

AS.140.317. The Hydrologic Sphere: Histories of Water in the Colonial and Postcolonial World. 3 Credits.
Water supplies are becoming scarcer globally due to climate change. We use clean water—fresh and salt—in a variety of ways that provide comfort, stability, and health, making it one of the most valuable commodities on Earth. While countries in the Global North are beginning to see more frequent and lengthier droughts, those in the Latin America, Africa, and South Asia have long struggled over how to distribute and use their clean water supplies. This class will examine how colonialism and its far-reaching effects have created an environment of scarce water supplies in many areas of the world. Water access is difficult to achieve, but for much of the Global South, the colonial period helped craft the problems we see today. This class will ask what colonial and postcolonial technologies’ construction and use teach us about equitable clean water distribution, how social and cultural identities influence water supplies and use, and why water has been such an important element— and commodity—in our world, especially where Europeans settled and oppressed local populations.
Area: Writing Intensive

AS.140.321. Scientific Revolution. 3 Credits.
How did the Western understanding of nature change between 1500 and 1720? We’ll study the period through the works of astronomers and astrologers, naturalists and magi, natural philosophers and experimentalists, doctors and alchemists & many others.
AS.140.322. Follow the money: Science, technology, and the 'knowledge economy,' c.1800-present. 3 Credits.
This course examines the historical emergence of knowledge-driven economies, paying special attention to the funding, development, and use of science and technology for commercial purposes.
Area: Writing Intensive

AS.140.324. Commercializing Science: Academic Entrepreneurs from Kelvin to Venter. 3 Credits.
From the 19th century physicist William Thomson (Lord Kelvin) to contemporary geneticists such as Walter Gilbert and Craig Venter, academic scientists and engineers across a broad range of disciplines have commercialized academic knowledge and inventions as patentees, consultants, and entrepreneurs. This course examines the motives and strategies behind such commercialization activities, ethical issues associated with them, and the factors influencing their success. We will also explore the history of currently dominant policies and institutions designed to foster the commercialization of academic science and evaluate their impact from a longer-term perspective.
Area: Writing Intensive

AS.140.327. Science and Utopia. 3 Credits.
This seminar will explore the complex interaction between science, technology and utopian/dystopian thought from the late nineteenth century. Major utopians will include Bellamy, H.G. Wells, Mark Twain, Frank Lloyd Wright, Aldous Huxley, George Orwell, Sinclair Lewis, B.F. Skinner, Margaret Atwood, and Walt Disney.

AS.140.329. Women, Health, and Medicine in Colonial and Antebellum America. 3 Credits.
This class will examine the history of women’s health and medicine in America from the 17th century to the mid-19th century, a period in which settler colonialism and the trans-Atlantic slave trade mixed European, Indigenous American, and African people and belief systems, resulting in diverse healing practices and understandings of the body and gender. Major themes addressed in the course include reproductive health, domestic and “alternative” medicine, as well as enslavement, racialized medicine, poverty, disability, and sexuality.
Area: Writing Intensive

AS.140.335. Photography in Science and Medicine (19th Century-Present). 3 Credits.
How did photography change science and medicine, and vice versa? This course explores how and why photography and related imaging techniques became central to a broad variety of fields of science and medicine, ranging from anthropology and astronomy to embryology, nuclear physics, and radiology. It also considers how these techniques were created in the first place and to what extent they affected the standing of photography as an “art-science.” Central themes will include (among others) the status and objectivity of photographic evidence; the historical relationships between technical, scientific, and artistic change; the role of photography in disseminating scientific and medical knowledge and (mis)information; the racial and gender biases of scientific and medical photography; and photography’s use as a tool of scientific exploration, measurement, and surveillance. Students will be developing their own research projects in consultation with the instructor.

AS.140.336. History of Mental Healthcare in the United States. 3 Credits.
In recent decades, much has been done in the United States to destigmatize mental illness and incorporate psychiatric services into broader systems of healthcare and welfare. As clinicians, policy makers, social scientists, activists, and other stakeholders have collaborated to promote mental health and reintegrate people with behavioral disorders into society, they have often contrasted their efforts with those made in the past, portraying community-based approaches as more efficacious and humane. Narratives like these, however, de-emphasize many important continuities in the history of American psychiatry. In this discussion-based course, students will explore how concerns about citizenship and social control have shaped the organization and provision of mental healthcare in the United States from the early nineteenth century to the present day. They will also complete various assignments designed to hone their ability to evaluate historical arguments, conduct independent and collaborative research on primary sources, and communicate the results of their scholarship to professional and lay audiences.

AS.140.338. Unsafe America: Accidents, Disasters, and Society, 1800–2020. 3 Credits.
According to the latest data from the National Safety Council, accidents cause over 173,000 deaths and 48,300,000 injuries per year across the United States. Since the nineteenth century, accidents ranging from burns to car crashes to the Three Mile Island nuclear disaster have become increasingly central to American life. This course examines the history of accidents and why Americans have chosen to control some hazards but not others. We will investigate how accidents have changed over time alongside the introduction and spread of new technologies; cultural beliefs about safety; the economic and political interests of different stakeholders; and the efforts of safety experts, nonprofits, corporations, families, and the government to protect Americans from harm. On one level, this course traces the unexpected consequences of remaking the United States with modern industry, transportation, infrastructure, and consumer products. At the same time, it captures how the principles of free enterprise and personal responsibility continue to influence the American safety movement.
Area: Writing Intensive

AS.140.341. Humanoid Robots in Global History. 3 Credits.
Humanoid machines reflect their creators’ ideals of humanity. Comparing examples from societies across the globe we will investigate what factors shaped these ideals, and how they manifested in technological design.
Area: Writing Intensive

AS.140.347. History Of Genetics. 3 Credits.
Intellectual and social history of the gene concept, including Mendelism, eugenics, medical genetics, DNA, genomics, and personalized medicine.
Area: Writing Intensive

AS.140.356. Man vs. Machine: Resistance to New Technology since the Industrial Revolution. 3 Credits.
This course analyzes different episodes of “luddism” in the history of science and technology, from the destruction of textile machinery in the early 1800s up to recent controversies about biotechnology and ICT.
AS.140.364. The City Course: Disciplinary Perspectives on Urban Life and Form. 3 Credits.
This course aims, first, at enlarging our understanding of cities by looking at them from a variety of disciplinary perspectives and, secondly, at examining the distinctive ways of thinking associated with disciplines from engineering, the sciences and medicine to anthropology, sociology, economics, archaeology, history and literature. Baltimore and cities from around the world will provide resource material. Lectures, discussions, term projects.

AS.140.374. Force and Matter from Galileo to Maxwell’s Field Theory. 3 Credits.
This seminar will trace the concept of force and its interaction with matter from Galileo in the late sixteenth century to rise of field theory in the work of James Clerk Maxwell in the late nineteenth century. Major figures to be studied through primary source readings are Galileo, Kepler, Descartes, Hobbes, Newton, Boscovich, Schelling, Fourier, Faraday, William Thomson (Lord Kelvin) and Maxwell.

AS.140.391. Individualized Medicine from Antiquity to the Genome Age. 3 Credits.
A seminar for advanced undergraduates. We explore the notion of the individual in medicine over twenty-five centuries, from the Hippocratics to the invention of the case study during the Renaissance to the current JHU medical curriculum. The history of medicine survey, AS.140.105 or AS.140.106, is recommended though not required. Graduate students are welcomed but should expect to do additional work and readings.

Area: Writing Intensive

AS.140.393. Technology and the Making of the Modern World. 3 Credits.
This course critically examines the role of technology in some of the main developments that have shaped the modern world, ranging from industrialization and globalization processes to the rise of new political ideologies and gender patterns. This course is co-taught by an instructor from the Smithsonian Institution and will include a public history research project.

AS.140.394. Heredity, Eugenics, and Society. 3 Credits.
In this course, we will examine the ways in which concepts of the gene, heredity, and innateness have both shaped and been shaped by society over the last two-plus centuries. Topics under discussion may include: eugenics, biological determinism, scientific racism, human breeding programs, genetics and gender, genetics and intelligence, genetic engineering including CRISPR, assisted reproductive technologies, sociogenomics, and polygenic risk scores. Term paper. AS.140.106 recommended.

Area: Writing Intensive

AS.140.395. Prosthetics and Technologies of Disability. 3 Credits.
The purpose of prosthetics seems to be fairly straightforward—to restore function that was lost due to the loss of a body part. According to this logic, the quality of prosthetics is measured in its ability to replicate lost human function and restore individuals with disabilities to normalcy. And indeed, numerous disability technologies enrich the experience of individuals in need of them. At the same time, these very technologies are often perceived as a marker of something abnormal, or, by the nature of their design prove to be an obstacle for mobility and access. Therefore, as much as prosthetics and other technologies of disabilities improve the quality of life, they also led to stigmatization, marginalization, and exclusion. By looking at prosthetics and disability in a variety of historical contexts, we will learn what kind of ideas of ‘normalcy’ they reflect, and how they shape the experience of individuals who use them.

Area: Writing Intensive

AS.140.396. Encoding Bias: Algorithms, Artificial Intelligence, and the History of Computing. 3 Credits.
How can an inanimate object be biased? How is it possible for a machine or software to discriminate on the basis of race, gender, or economic status? After all, machines are supposed to be free from the lapses of judgement that can cloud human minds. And yet, the more we rely on digital technologies, the more we realize that algorithms are not as neutral and objective as we hoped they would be. This course traces the origins of computer bias to the aspirations, ideals, metaphors, hopes, fears, and, of course, biases of the people who developed computer technologies. During the semester, we will learn about the humble origins of computing technologies, the original, human “computers” in astronomical labs, Alan Turing’s invention of a “digital” mechanical computer to decipher Nazi codes, the Cybernetics movement, the models of rationality and intelligence that guided the development of AI, the gendering of the computing profession, the advent of personal computers, and more. While exploring these episodes in the history of computing we will discuss and analyze the social and structural origins of computer and algorithm bias.

Area: Writing Intensive

AS.140.398. Godzilla and Fukushima: Japanese Environment in History and Films. 3 Credits.
Japan is often described as “nature-loving,” and is considered to be one of world leaders in environmental protection policies. Yet current environmental successes come on the heels of numerous environmental disasters that plagued Japan in the past centuries. Juxtaposing Japanese environmental history and its reflection in popular media, the course will explore the intersection between technology, environment, and culture.

Area: Writing Intensive

AS.140.401. The Knowledge City: from Silicon Valley to Bloomberg’s New York. 3 Credits.
This seminar will explore the increasingly productive relationship between research universities and urban and regional development in the period after World War II to the present. Working with the faculty, participants will be expected to develop a research paper. Discussion, presentations, lectures.

AS.140.411. Senior Research Seminar. 3 Credits.

AS.140.412. Research Seminar. 2 Credits.
Departmental Majors Writing a Senior Thesis Only

Area: Writing Intensive

AS.140.423. Science and Science Fiction in Global Perspective. 3 Credits.
What can we learn from science fiction about the history of science and technology? What ideas about science do Sci-Fi novels manifest? Is the relationship between science and science fiction always the same, across different time periods and geographical areas? This course will explore these questions by taking a comparative perspective. Each meeting we will read a Sci-Fi novel from Europe, America, South and East Asia, and discuss it in conjunction with historical writing about relevant scientific developments. Reading Sci-Fi novels from 17th-century Germany, 19th-century England and India, and 20th-century Japan, China, Korea and the US, the students will explore how actual scientific developments were reflected in fiction, and what fictional depictions say about the aspirations and anxieties provoked by new technologies.

Area: Writing Intensive
AS.140.435. Ways of Knowing: New Histories of Science, Medicine, and Technology. 3 Credits.
What does it mean for science to have a history? Comparing newer approaches with classic works, we will explore different strategies for placing science, medicine, and technology in social context.
Area: Writing Intensive

AS.140.501. Independent Study. 3 Credits.
You must request Independent Academic Work using the Independent Academic Work form found in Student Self-Service: Registration > Online Forms.

AS.140.502. Independent Study. 1 - 3 Credits.
You must request Independent Academic Work using the Independent Academic Work form found in Student Self-Service: Registration > Online Forms.

AS.140.598. HoST Internship. 1 Credit.
You must request Independent Academic Work using the Independent Academic Work form found in Student Self-Service: Registration > Online Forms.

This graduate seminar introduces students to a variety of methods, sources, and approaches used in the historical study of science, medicine, and technology. The emphasis will be on the development of skills crucial to the successful completion of research projects.

AS.140.609. Technology and Labor.
In recent years historians, anthropologists, and sociologists of technology show increasing interest in questions of human labor. Adding to the literature that explores emergence, production, and use of technology, the new direction seeks to uncover and to analyze human labor that is necessitated by emerging technologies, and that is often concealed by them. The course will cover several classic works but will mainly focus on recent exciting scholarship that explores the relationship between technology and labor.

AS.140.614. Media of Science, Medicine, and Technology.
This research seminar starts from the premise that the production and circulation of scientific knowledge has always been mediated: through parchment and paper, books and journals, laboratory notebooks and electronic datasets. Likewise the body in health and illness has mediated through material objects, from the uroscopy flask to the stethoscope to MRIs and PET scans. Students will explore the theory and method of media history in developing their own research projects in the history of science, medicine, and technology.

AS.140.641. Departmental Colloquium.
Reports by staff members, students, and invited speakers.

AS.140.642. Colloquium.
Reports by faculty, students, and invited speakers.

AS.140.660. Working with Manuscripts: Paleography, Codicology, and Editing.
This is a practical course on using manuscript materials (especially premodern documents). It covers how to read both Latin and early modern vernacular scripts in various formats (paleography), how to describe, date, and document manuscript materials (codicology), and how to edit texts and make critical (and not-so-critical) editions. Other related topics of interest to enrolled students are possible. The specific topics that will be stressed will respond to the interests and needs of those students who enroll. Students are encouraged to bring examples or problems from their own research for study, practice, and analysis.

AS.140.678. Catching Up: Responses to Technical Change in the 19th and 20th Centuries.
This research seminar focuses on varieties of paths to modernity by nations in the 19th and 20th centuries as driven by technological change. The approach will be comparative and its reach global. The emphasis will be on preparing a research paper by semester's end.

AS.140.679. Humanoid Robots in Global History.
Graduate section of AS.140.341.

AS.140.681. Graduate Readings in History of Science and Technology.
The course explores advanced topics in History of Technology, as well as in History of Science, Medicine, and Technology in East Asia.

AS.140.683. Non-human Agency in Science, Medicine, and Technology Studies.
Studies of non-humans repeatedly challenge the assumption that agency is an exclusively human prerogative. We not only witness animals scheme and carry out their plans, but also experience interaction with non-animate objects as if they had will and capacity to manipulate us. What is the relationship between anthropomorphization and agency? What does our attribution of agency to objects say about our understanding of agency as an analytical category? How do we integrate non-humans into our investigation of human activity? In this course we will explore studies of non-human agency in history, sociology, and anthropology of science, medicine, and technology. Learning from authors such as Donna Haraway, Anna Tsing, Bruno Latour, Sherry Turkle, Lucy Suchman, Cynthia Breazeal and others, we will examine human relationship with companion species, vermin, mycelium, humanoids, digital technologies, and others.

This seminar explores the global economic history of science and technology and the historical entanglements between science and capitalism by investigating various practices that were simultaneously scientific and economic or had both scientific and economic dimensions. Through this lens, which reflects recent trends in the historiography of science-economy relationships, this course seeks to develop new perspectives on topics ranging from the modern histories of scientific publishing and popularization to the acquisition and standardization of research tools and materials and the conduct of various forms of knowledge work. Specific interests of the seminar participants will be taken into account.

AS.140.685. Histories of Reproduction.
While there is a vast literature on reproduction in a global context, this course will focus on the arc of what we might call decolonial histories of reproduction—those that center issues of justice, freedom, intimacy, and agency, as well as cultural negotiation, conflict, and change. Students will write critical histories of reproduction, with attention to the ways in which reproductive politics interface with institutions that exert hegemonic, racialized, gendered, and ableist forms of state power and colonial power. We will also appreciate the ways in which reproduction interacts with other—non geographically-bound, non-institutionalized, and non-state mediated—forms of biopolitical power. We will analyze how the historiography has evolved over time and discuss future directions in the field.

AS.140.705. History of Science: Antiquity To Renaissance.
Graduate-level version of 140.301 with additional readings, discussions and assignments in seminar format.

Survey of history of science, 18th-20th c. Students are encouraged to attend lectures for 140.302, but seminar may be taken without attending those lectures.
AS.140.710. Scientific Revolution.
Reading intensive seminar that studies the events and ideas that transformed western science from Medieval natural philosophy to the experimental sciences (1500-1720s). Lecture meets with AS.140.321.


AS.140.808. Graduate Independent Research.
Independent research for graduate students in the History of Science and Technology Department only.

AS.140.888. Dissertation Research.
For graduate students in the History of Science and Technology Department Only.

For current faculty and contact information go to http://host.jhu.edu/people/