

SCIENCE, TECHNOLOGY, AND SOCIETY

The Program in Science, Technology, and Society (STS) focuses on the ways in which scientific, technological, and social factors interact to shape modern life. The program brings together humanists, social scientists, engineers, and natural scientists, all committed to transcending the boundaries of their disciplines in a joint search for new insights and new ways of reaching science and engineering students. The goal of the program is to set up a forum to explore the relationship between what scientists and engineers do and the constraints, needs, and responses of society.

Located in a major university where most people study science and engineering, STS is dedicated to understanding the context of science and engineering.

Undergraduate Study

MIT students are increasingly seeking to understand the social and historical contexts in which they will work and the social consequences of what they will do in their professional careers. STS subjects help them think realistically and creatively about the intellectual, moral, political, and social issues raised by the rapid growth of science and technology in the 20th century and beyond.

STS contributes to undergraduate education at MIT in several ways. It offers general subjects to introduce students to broad social and intellectual perspectives on science and engineering fields. It also offers more specialized subjects in the history of science and technology and in social and cultural studies of science and technology. Within each of these categories, students can choose both introductory and more advanced subjects.

STS as a Second Major

Students who wish to integrate their professional study of engineering or science with a rigorous treatment of its relation to social and historical forces may pursue STS as a second major (<http://catalog.mit.edu/degree-charts/science-technology-society-sts>) in cooperation with the Schools of Engineering and Science. The object of this program is to give those students the full technical and scientific education provided by a science or engineering major, balanced with intensive study of the historical and social contexts of science and technology. Double major applications from students in other Schools (e.g., Architecture and Planning; Management; Humanities, Arts, and Social Sciences) will be considered on a case-by-case basis.

Students in the double major program must complete all the requirements of both majors. The STS requirements include 14 subjects as follows:

- STS.004 Intersections: Science, Technology, and the World

- At least one STS Tier I subject (<http://sts-program.mit.edu/academics/undergraduate/tier-i-subjects>), in addition to STS.004
- At least one STS Tier II subject (<http://sts-program.mit.edu/academics/undergraduate/tier-ii-subjects>)
- Five other STS subjects
- Four subjects related to the historical and social study of science and technology
- STS.THT Undergraduate Thesis Tutorial
- STS.THU Undergraduate Thesis

If a student's other major also requires a thesis, students may coordinate their thesis effort, pending approval of undergraduate officers in both majors. Further details on the requirements of the STS program may be obtained from the STS undergraduate academic officer and the STS academic administrator.

Joint Degree Programs

Students who wish to integrate studies in STS and science or engineering in the context of a single degree should consider this program. It leads to one degree, either a Bachelor of Science in Humanities and Science or a Bachelor of Science in Humanities and Engineering. The STS requirement for either degree is 10 subjects as follows:

- STS.004 Intersections: Science, Technology, and the World
- At least one STS Tier I subject (<http://sts-program.mit.edu/academics/undergraduate/tier-i-subjects>), in addition to STS.004
- At least one STS Tier II subject (<http://sts-program.mit.edu/academics/undergraduate/tier-ii-subjects>)
- Five other STS subjects
- STS.THT Undergraduate Thesis Tutorial
- STS.THU Undergraduate Thesis

Consult the 21E (<http://catalog.mit.edu/degree-charts/humanities-engineering-course-21e>) and 21S (<http://catalog.mit.edu/degree-charts/humanities-science-course-21s>) degree charts for details on the requirements for these joint degrees. Further details may be obtained from the SHASS Dean's Office (hass-www@mit.edu), Room 4-240, and the STS academic administrator.

Minor in Science, Technology, and Society

The goal of the minor program is to give students a broad social perspective on the fields of engineering and science: how they have evolved and how they fit into the wider context of society, culture, politics, and values.

The Minor in Science, Technology, and Society consists of six STS subjects, including STS.004, at least one additional subject from the Tier I list, and at least one subject from the Tier II list.

Tier I

STS.004	Intersections: Science, Technology, and the World	12
<i>Select one of the following:</i>		12
STS.001	Technology in American History	
STS.002	Finance and Society	
STS.003	The Rise of Modern Science	
STS.006[J]	Bioethics	
STS.007	Technology in History	
STS.008	Technology and Experience	
STS.009	Evolution and Society	
STS.011	Engineering Life: Biotechnology and Society	
STS.012	Science in Action: Technologies and Controversies in Everyday Life	
Tier II ¹		
Select one subject from the list of Tier II subjects		9-12
Electives		
Select three additional subjects from among Tiers I and II		27-36
Total Units		60-72

¹ See list of Tier II subjects (<http://sts-program.mit.edu/academics/undergraduate/tier-ii-subjects>).

Graduate Study

In collaboration, STS, the History Faculty, and the Anthropology Program offer a doctoral program in History, Anthropology, and Science, Technology and Society (HASTS).

The objective of the program is to develop advanced competence in the study of science and technology from a historical and social scientific perspective. Students are expected to develop professional mastery of a field of history or one of the social sciences. They must also master the underlying concepts in science and engineering that relate to their special field of interest.

Graduate students are required to take at least 10 subjects and usually complete them within their first two years. Normally, all students take the following required introductory seminars in their first year:

21A.859[J]	Social Theory and Analysis	12
21H.991	Theories and Methods in the Study of History	12
STS.260	Introduction to Science, Technology, and Society	12

Students are encouraged to take 21A.809 Designing Empirical Research in the Social Sciences or 21A.819 Qualitative Research Methods at some point in their program. To fulfill the remaining subject requirement, students choose from among several

departmental seminars designed to offer more in-depth study of particular topics. They may also take subjects offered by other MIT departments and through cross-registration with Harvard.

Upon the satisfactory completion of general examinations in the third year, students proceed to the writing of a dissertation proposal and dissertation, usually with the assistance of a multidisciplinary advisory committee.

Students from any academic discipline are invited to apply to the doctoral program.

For additional information about the graduate program, visit the HASTS website (<http://web.mit.edu/hasts>), or contact the STS academic administrator, Room E51-163, 617-253-9759.

Inquiries

Additional information on the Program in Science, Technology, and Society (<http://sts-program.mit.edu>) may be obtained from the STS academic administrator, Room E51-163, 617-253-9759.

Faculty and Teaching Staff

Jennifer S. Light, PhD
 Professor of Science, Technology, and Society
 Professor of Urban Studies and Planning
 Head, Science, Technology, and Society Program

Professors

Louis L. Bucciarelli Jr, PhD
 Professor Post-Tenure of Engineering and Technology Studies

Michael M. J. Fischer, PhD
 Andrew W. Mellon Professor in the Humanities
 Professor of Science and Technology Studies
 Professor of Anthropology

Deborah K. Fitzgerald, PhD
 Leverett Howell Cutten '07 and William King Cutten '39 Professor of the History of Technology

David I. Kaiser, PhD
 Germeshausen Professor of the History of Science
 Professor of Physics

Kenneth R. Manning, PhD
 Thomas Meloy Professor of Rhetoric
 Professor of Science, Technology, and Society

David A. Mindell, PhD
 Frances and David Dibner Professor in the History of Engineering and Manufacturing
 Professor of Aeronautics and Astronautics
 (On leave, fall)

Merritt Roe Smith, PhD
Leverett Howell Cutten '07 and William King Cutten '39 Professor of
the History of Technology
Professor of History

Sherry R. Turkle, PhD
Abby Rockefeller Mauzé Professor of the Social Studies of Science
and Technology
(On leave)

Rosalind H. Williams, PhD
Bern Dibner Professor Post-Tenure in the History of Science and
Technology
Professor Post-Tenure of Science, Technology, and Society
Professor Post-Tenure of Comparative Media Studies/Writing

Associate Professors

Clapperton Chakanetsa Mavhunga, PhD
Associate Professor of Science, Technology, and Society

Assistant Professors

Dwaipayan Banerjee, PhD
Assistant Professor of Science, Technology, and Society
(On leave)

William Deringer, PhD
Leo Marx Career Development Professor
Assistant Professor of Science, Technology, and Society

Robin Scheffler, PhD
Leo Marx Career Development Professor
Assistant Professor of Science, Technology, and Society

Adjunct Professors

John R. Durant, PhD
Adjunct Professor of Science, Technology, and Society

Lecturers

Valentina Pugliano, PhD
Lecturer in History
Research Associate in the Program in Science, Technology, and
Society

Professors Emeriti

Loren Graham, PhD
Professor Emeritus of the History of Science

Evelyn Fox Keller, PhD
Professor Emerita of the History and Philosophy of Science

Kenneth Keniston, PhD
Andrew S. Mellon Professor Emeritus of Human Development

Leo Marx, PhD
William R. Kenan Professor Emeritus
Professor Emeritus of American Cultural History

Theodore A. Postol, PhD
Professor Emeritus of Science, Technology, and National Security
Policy

Eugene B. Skolnikoff, PhD
Professor Emeritus of Political Science
Professor Emeritus of Science, Technology, and Society

Undergraduate Subjects

Tier I Subjects

STS.001 Technology in American History

Prereq: None
U (Spring)
3-0-9 units. HASS-H

A survey of America's transition from a rural, agrarian, and artisan society to one of the world's leading industrial powers. Treats the emergence of industrial capitalism: the rise of the factory system; new forms of power, transport, and communication; the advent of the large industrial corporation; the social relations of production; and the hallmarks of science-based industry. Views technology as part of the larger culture and reveals innovation as a process consisting of a range of possibilities that are chosen or rejected according to the social criteria of the time.

M. R. Smith

STS.002 Finance and Society

Prereq: None
Acad Year 2018-2019: U (Fall)
Acad Year 2019-2020: Not offered
3-0-9 units. HASS-S; CI-H

Examines finance as a social technology intended to improve economic opportunity by moving capital to where it is most needed. Surveys the history of modern finance, from medieval Italy to the Great Depression, while addressing credit, finance and state (and imperial) power, global financial interconnection, and financial crises. Explores modern finance (since about 1950) from a variety of historical and social-scientific perspectives, covering quant finance, financialization, the crisis of 2007-2008, and finance in the digital age. Enrollment limited.

W. Deringer

STS.003 The Rise of Modern Science

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Spring)

3-0-9 units. HASS-H; CI-H

Covers the development of major fields in the physical and life sciences, from 18th-century Europe through 20th-century America. Examines ideas, institutions, and the social settings of the sciences, with emphasis on how cultural contexts influence scientific concepts and practices.

*Staff***STS.004 Intersections: Science, Technology, and the World**

Prereq: None

U (Fall)

3-0-9 units. HASS-H

Exposes students to multidisciplinary studies in Science, Technology, and Society (STS), using four case studies to illustrate a broad range of approaches to basic principles of STS studies. Case studies vary from year to year, but always include a current MIT event. Other topics are drawn from legal and political conflicts, and arts and communication media. Includes guest presenters, discussion groups, field activities, visual media, and a practicum style of learning. Enrollment limited.

*D. Fitzgerald***STS.006[J] Bioethics**

Same subject as 24.06[J]

Prereq: None

Acad Year 2018-2019: U (Fall)

Acad Year 2019-2020: Not offered

3-0-9 units. HASS-H; CI-H

See description under subject 24.06[J].

*A. Jaques, R. Scheffler***STS.007 Technology in History**

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Spring)

3-0-9 units. HASS-H; CI-H

Covers theories of the interactions between historical and technological change; relations between the histories of science and of technology; purported turning points such as the Neolithic, Industrial, and Information Revolutions; case studies from a wide range of times and places; and connections across time and space. Lectures supplemented by student presentations. Frequent writing, rewriting, and small group work. Enrollment limited.

*R. H. Williams***STS.008 Technology and Experience**

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Spring)

3-0-9 units. HASS-S; CI-H

Introduces the "inner history" of technology: how it affects intimate aspects of human experience from sociological, psychological and anthropological perspectives. Topics vary, but may include how the internet transforms our experience of time, space, privacy, and social engagement; how entertainment media affects attention, creativity, aesthetics and emotion; how innovations in wearable and textile technologies reshape notions of history and identity; how pharmaceuticals reshape identity, mood, pain, and pleasure. Includes in-class discussion of readings, short written and multimedia assignments, final project. Enrollment limited.

*Staff***STS.009 Evolution and Society**

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Fall)

3-0-9 units. HASS-H; CI-H

Provides a broad conceptual and historical introduction to scientific theories of evolution and their place in the wider culture. Embraces historical, scientific and anthropological/cultural perspectives grounded in relevant developments in the biological sciences since 1800 that are largely responsible for the development of the modern theory of evolution by natural selection. Students read key texts, analyze key debates (e.g. Darwinian debates in the 19th century, and the creation controversies in the 20th century) and give class presentations.

*J. Durant, R. Scheffler***STS.011 Engineering Life: Biotechnology and Society**

Prereq: None

Acad Year 2018-2019: U (Spring)

Acad Year 2019-2020: Not offered

3-0-9 units. HASS-H

Provides instruction in the history of humanity's efforts to control and shape life through biotechnology, from agriculture to gene editing. Examines the technologies, individuals and socio-economic systems that are associated with such efforts, as well as the impact that these efforts have on society and science as a whole. Explores these issues with particular attention to the development of the modern biotechnology industry in the Greater Boston area. Includes a field trip.

R. W. Scheffler

STS.012 Science in Action: Technologies and Controversies in Everyday Life

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Spring)

3-0-9 units. HASS-S

Explores a range of controversies about the role of technology, the nature of scientific research and the place of politics in science: debates about digital piracy and privacy, the role of activism in science, the increasingly unclear boundaries between human and non-human, the role of MRIs as courtroom evidence, the potential influence of gender on scientific research, etc. Provides exposure to science in a dynamic relation with social life and cultural ideas. Materials draw from humanities and social science research, ethnographic fieldwork, films and science podcasts, as well as from experimental multimedia.

*D. Banerjee***Tier II Subjects****STS.022[] Gender in Science, Technology, and Environment**

Same subject as 21G.057[], WGS.275[]

Prereq: None

U (Spring)

3-0-9 units. HASS-H

See description under subject 21G.057[]. Limited to 18.

*B. Stoetzer***STS.023[] Science, Gender and Social Inequality in the Developing World**

Same subject as WGS.226[]

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Fall)

3-0-9 units. HASS-H

See description under subject WGS.226[].

*A. Sur***STS.025[] Making the Modern World: The Industrial Revolution in Global Perspective**

Same subject as 21H.285[]

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Spring)

3-0-9 units. HASS-H

Global survey of the great transformation in history known as the "Industrial Revolution." Topics include origins of mechanized production, the factory system, steam propulsion, electrification, mass communications, mass production and automation. Emphasis on the transfer of technology and its many adaptations around the world. Countries treated include Great Britain, France, Germany, the US, Sweden, Russia, Japan, China, and India. Includes brief reflection papers and a final paper.

*M. R. Smith***STS.026 History of Manufacturing in America**

Subject meets with STS.425

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Fall)

3-0-9 units. HASS-H

Introductory survey of fundamental innovations and transitions in American manufacturing from the colonial period to the mid-twentieth century. Primary emphasis on textiles and metalworking, with particular attention to the role of the machine tool industry in the American manufacturing economy. Students taking graduate version are expected to explore the material in greater depth.

*M. R. Smith***STS.027[] The Civil War and the Emergence of Modern America: 1861-1890**

Same subject as 21H.205[]

Subject meets with STS.427

Prereq: Permission of instructor

Acad Year 2018-2019: U (Fall)

Acad Year 2019-2020: Not offered

3-0-9 units. HASS-H

Using the American Civil War as a baseline, considers what it means to become "modern" by exploring the war's material and manpower needs, associated key technologies, and how both influenced the United States' entrance into the age of "Big Business." Readings include material on steam transportation, telegraphic communications, arms production, naval innovation, food processing, medicine, public health, management methods, and the mass production of everything from underwear to uniforms – all essential ingredients of modernity. Students taking graduate version complete additional assignments.

M. R. Smith

STS.028 Seven Wonders of the Engineering World

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Spring)

3-0-9 units. HASS-H

Uses case studies to take a broad-ranging look at seven major engineering achievements in world history. Examines the nature of engineering as a source of knowledge production/application, how it reflects the cultural settings in which it emerges, and how it changes as it enters different cultural and economic settings. Includes weekly reflection papers. Achievements covered vary from term to term. Limited to 20.

*M. R. Smith***STS.032 Energy, Environment, and Society**

Prereq: None

U (Spring)

3-0-9 units. HASS-H

Examines national and global energy debates, namely energy security, climate change, and energy access. Explores technological, market, environmental, cultural and political "fixes" to the energy question, as well as a wide variety of energy forms and stakeholders. Evaluates development, nuclear security, environment ethics, and conflicts between energy and food security. Includes debates, presentations, group projects (in class and in the Cambridge community), grant-writing, and individual written assignments. Enrollment limited.

*C. Mavhunga***STS.033[] People and the Planet: Environmental Histories and Engineering**

Same subject as 11.004[]

Subject meets with 11.204[], IDS.524[]

Prereq: None

U (Spring)

3-3-6 units. HASS-E

See description under subject 11.004[].

*A. Glasmeier, J. Knox-Hayes, A. Slocum, R. Scheffler, J. Trancik***STS.034 Science Communication: A Practical Guide**

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Fall)

3-0-9 units. HASS-H; CI-H

Develops students' abilities to communicate science effectively in a variety of real-world contexts. Covers strategies for dealing with complex areas like theoretical physics, genomics and neuroscience, and addresses challenges in communicating about topics such as climate change and evolution. Projects focus on speaking and writing, being an expert witness, preparing briefings for policy-makers, writing blogs, giving live interviews for broadcast, and creating a prospectus for a science exhibit in the MIT Museum. Enrollment limited.

*B. Venkataraman***STS.035 Exhibiting Science**

Prereq: One CI-H/CI-HW subject and permission of instructor

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Spring)

2-2-8 units. HASS-A

Project-based seminar covers key topics in museum communication, including science learning in informal settings, the role of artifacts and interactives, and exhibit evaluation. Students work on a term-long project, organized around the design, fabrication, and installation of an original multimedia exhibit about current scientific research at MIT. Culminates with the project's installation in the MIT Museum's Mark Epstein Innovation Gallery. Limited to 20; preference to students who have taken STS.034.

*J. Durant***STS.042[] Einstein, Oppenheimer, Feynman: Physics in the 20th Century**

Same subject as 8.225[]

Prereq: None

Acad Year 2018-2019: U (Fall)

Acad Year 2019-2020: Not offered

3-0-9 units. HASS-H

Explores the changing roles of physics and physicists during the 20th century. Topics range from relativity theory and quantum mechanics to high-energy physics and cosmology. Examines the development of modern physics within shifting institutional, cultural, and political contexts, such as physics in Imperial Britain, Nazi Germany, US efforts during World War II, and physicists' roles during the Cold War. Enrollment limited.

D. I. Kaiser

STS.043 Technology and Self: Science, Technology, and Memoir

Subject meets with STS.443

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Fall)

2-0-7 units. HASS-S

Focuses on the memoir as a window onto the relationship of the scientist, engineer, and technologist to his or her work. Studies the subjective side of technology and the social and psychological dimensions of technological change. Students write about specific objects and their role in their lives - memoir fragments. Readings concern child development theory and the role of technology in development. Explores the connection between material culture, identity, cognitive and emotional development. Students taking graduate version complete additional assignments. Limited to 15; no listeners.

S. Turkle

STS.044 Technology and Self: Things and Thinking

Subject meets with STS.444

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Fall)

2-0-7 units. HASS-S

Explores emotional and intellectual impact of objects. The growing literature on cognition and "things" cuts across anthropology, history, social theory, literature, sociology, and psychology and is of great relevance to science students. Examines the range of theories, from Mary Douglas in anthropology to D. W. Winnicott in psychoanalytic thinking, that underlies "thing" or "object" analysis. Students taking graduate version complete additional assignments. Limited to 15; no listeners.

S. Turkle

STS.046[J] The Science of Race, Sex, and Gender

Same subject as 21A.103[J], WGS.225[J]

Prereq: None

U (Fall)

3-0-9 units. HASS-S

See description under subject WGS.225[J].

A. Sur

STS.047 Quantifying People: A History of Social Science

Prereq: None

Acad Year 2018-2019: U (Spring)

Acad Year 2019-2020: Not offered

3-0-9 units. HASS-S

Historical examination of the quest to understand human society scientifically. Focuses on quantification, including its central role in the historical development of social science and its importance in the 21st-century data age. Covers the political arithmetic of the 17th century to the present. Emphasizes intensive reading of primary sources, which represent past attempts to count, calculate, measure, and model many dimensions of human social life (population, wealth, health, happiness, intelligence, crime, deviance, race). Limited to 25.

W. Deringer

STS.048 African Americans in Science, Technology, and Medicine

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Spring)

3-0-9 units. HASS-H

A survey of the contributions of African Americans to science, technology, and medicine from colonial times to the present. Explores the impact of concepts, trends, and developments in science, technology, and medicine on the lives of African Americans. Examples include the eugenics movement, the Tuskegee Syphilis Experiment, the debate surrounding racial inheritance, and IQ testing.

K. Manning

STS.049 The Long War Against Cancer

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Spring)

3-0-9 units. HASS-H; CI-H

Examines anticancer efforts as a critical area for the formation of contemporary biomedical explanations for health and disease. Begins with the premise that the most significant implications of these efforts extend far beyond the success or failure of individual cancer therapies. Considers developments in the epidemiology, therapy, and politics of cancer. Uses the history of cancer to connect the history of biology and medicine to larger social and cultural developments, including those in bioethics, race, gender, activism, markets, and governance.

R. W. Scheffler

STS.050 The History of MIT

Prereq: None

U (Spring)

3-0-9 units. HASS-H

Examines the history of MIT, from its founding to the present, through the lens of the history of science and technology. Topics include William Barton Rogers; the modern research university and educational philosophy; campus, intellectual, and organizational development; changing laboratories and practices; MIT's relationship with Boston, the federal government, and industry; and notable activities and achievements of students, alumni, faculty, and staff. Includes guest lecturers, on-campus field trips, and interactive exercises. Limited to 40.

*D. Douglas***STS.060[] The Anthropology of Biology**

Same subject as 21A.303[]

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Fall)

3-0-9 units. HASS-S

See description under subject 21A.303[].

*S. Helmreich***STS.062[] Drugs, Politics, and Culture**

Same subject as 21A.305[]

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Fall)

3-0-9 units. HASS-S

See description under subject 21A.305[]]. Limited to 25.

*A. Moran-Thomas***STS.064[] DV Lab: Documenting Science through Video and New Media**

Same subject as 21A.550[]

Subject meets with 21A.559

Prereq: None

U (Spring)

3-3-12 units. HASS-A; CI-H

See description under subject 21A.550[]]. Limited to 12.

*C. Walley, C. Boebel***STS.065[] The Anthropology of Sound**

Same subject as 21A.505[]

Prereq: None

U (Spring)

Not offered regularly; consult department

3-0-9 units. HASS-S

See description under subject 21A.505[]].

*S. Helmreich***STS.068[] Advanced DV Lab: Documenting Science through Video and New Media**

Same subject as 21A.551[]

Prereq: 21A.550[] or permission of instructor

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Spring)

3-3-6 units. HASS-A

See description under subject 21A.551[]]. Enrollment limited.

*C. Walley, C. Boebel***STS.070[] Language and Technology**

Same subject as 24.913[], 21A.503[]

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Fall)

3-0-9 units. HASS-S

See description under subject 21A.503[]].

*G. Jones***STS.071[] Cross-Cultural Investigations: Technology and Development**

Same subject as EC.702[], 21A.801[]

Subject meets with EC.792[], 21A.839[], STS.481[]

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Spring)

3-0-9 units. HASS-S

See description under subject 21A.801[]].

*C. Walley***STS.074[] Art, Craft, Science**

Same subject as 21A.501[]

Prereq: None

U (Spring)

3-0-9 units. HASS-S

Credit cannot also be received for 21A.509[], STS.474[]

See description under subject 21A.501[]].

H. Paxson

STS.075[] Technology and Culture

Same subject as 21A.500[]

Prereq: None

U (Fall)

2-0-7 units. HASS-S

See description under subject 21A.500[]. Limited to 40.

S. Helmreich

STS.080[] Youth Political Participation

Same subject as 11.151[]

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Spring)

3-0-9 units. HASS-H

Surveys youth political participation in the US since the early 1800s. Investigates trends in youth political activism during specific historical periods, as well as what difference youth media production and technology use (e.g., radio, music, automobiles, ready-made clothing) made in determining the course of events. Explores what is truly new about "new media" and reviews lessons from history for present-day activists based on patterns of past failure and success. Some mandatory field trips may occur during class time. Limited to 40.

J. S. Light

STS.081[] Innovation Systems for Science, Technology, Energy, Manufacturing, and Health

Same subject as 17.395[]

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Fall)

2-0-7 units. HASS-S

Examines science and technology innovation systems, including case studies on energy, computing, advanced manufacturing, and health sectors. Emphasizes public policy and the federal government's role in that system. Focuses on the US but uses international examples. Reviews foundations of economic growth theory, innovation systems theory, and the basic approaches to science and technology policy. Explores the organization and role of energy and medical science R&D agencies, as well as gaps in those innovation systems. Also addresses the science and technology talent base as a factor in growth, and educational approaches to better support it. Class meets for nine weeks; in the remaining weeks, students work on a final paper due at the end of the term. Limited to 25.

W. B. Bonvillian

STS.082[] Science, Technology, and Public Policy

Same subject as 17.309[], IDS.055[]

Prereq: None

U (Spring)

4-0-8 units. HASS-S; CI-H

Credit cannot also be received for 17.310[], IDS.412[], STS.482[]

See description under subject 17.309[].

K. Oye, N. Selin

STS.084[] Social Problems of Nuclear Energy

Same subject as 22.04[]

Prereq: None

U (Spring)

3-0-9 units. HASS-S

See description under subject 22.04[]. Limited to 18.

R. S. Kemp

STS.085[] Foundations of Information Policy

Same subject as 6.805[]

Subject meets with STS.487

Prereq: Permission of instructor

U (Fall)

3-0-9 units. HASS-S

See description under subject 6.805[]. Enrollment limited.

H. Abelson, M. Fischer, D. Weitzner

STS.086[] Cultures of Computing

Same subject as 21A.504[], WGS.276[]

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: U (Spring)

3-0-9 units. HASS-S

See description under subject 21A.504[].

Staff

STS.o87 Biography in Science

Prereq: None

Acad Year 2018-2019: U (Fall)

Acad Year 2019-2020: Not offered

3-0-9 units. HASS-H

An examination of biography as a literary genre to be employed in the history of science. The use of biography in different historical periods to illuminate aspects of the development of science.

A critical analysis of autobiography, archival sources, and the oral tradition as materials in the construction of biographies of scientists. Published biographies of scientists constitute the major reading, but attention is given to unpublished biographical sources as well. Comparison is drawn between biography as a literary form in the history of science and in other disciplines.

*K. Manning***STS.o88 Africa for Engineers**

Prereq: None

U (Fall)

3-0-9 units. HASS-H

Covers historical, cultural, and ethical dimensions of engineering in Africa. Focuses on construction of big projects like cities, hydroelectricity dams, roads, railway lines, ports and harbors, transport and communication, mines, industrial processing plant, and plantations. Explores the contributions of big capital, engineers, politicians, and ordinary people. Emphasizes how local culture, politics, labor, and knowledge affect engineering. Also focuses on environmental and cultural impact assessment. Prepares students who wish to work or study in Africa and the Global South. Enrollment limited.

*C. Mavhunga***Special Subjects****STS.S20, STS.S21 Special Subject: Science, Technology and Society**

Prereq: None

U (Fall, IAP, Spring)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Addresses subject matter in Science, Technology and Society that is not offered in the regular curriculum.

*Staff***Research****STS.o95, STS.o96 Independent Study in Science, Technology, and Society**

Prereq: None

U (Fall, IAP, Spring)

Units arranged [P/D/F]

Can be repeated for credit.

For students who wish to pursue special studies or projects with a member of the Program in Science, Technology, and Society.

STS.o95 is letter-graded; STS.o96 is P/D/F.

*Staff***STS.UR Undergraduate Research**

Prereq: None

U (Fall, IAP, Spring, Summer)

Units arranged [P/D/F]

Can be repeated for credit.

Undergraduate research opportunities in the STS Program.

*Staff***STS.URG Undergraduate Research**

Prereq: None

U (Fall, IAP, Spring, Summer)

Units arranged

Can be repeated for credit.

Undergraduate research opportunities in the STS Program.

*Staff***STS.THT Undergraduate Thesis Tutorial**

Prereq: None

U (Fall, Spring)

Units arranged

Can be repeated for credit.

Definition and early-stage work on thesis project leading to STS.THU. Taken during first term of student's two-term commitment to thesis project. Student works closely with STS faculty tutor. Required of all candidates for an STS degree.

Staff

STS.THU Undergraduate Thesis

Prereq: STS.THT

U (Fall, IAP, Spring, Summer)

Units arranged

Can be repeated for credit.

Completion of work of the senior major thesis under the supervision of a faculty tutor. Includes gathering materials, preparing draft chapters, giving an oral presentation of thesis progress to faculty evaluators early in the term, and writing and revising the final text. Students meet at the end of the term with faculty evaluators to discuss the successes and limitations of the project. Required of all candidates for an STS degree.

*Staff***Graduate Subjects****Required Introductory Subjects****STS.250[J] Social Theory and Analysis**

Same subject as 21A.859[J]

Prereq: None

G (Fall)

3-0-9 units

See description under subject 21A.859[J].

*M. Fischer***STS.260 Introduction to Science, Technology, and Society**

Prereq: None

Acad Year 2018-2019: G (Spring)

Acad Year 2019-2020: Not offered

3-0-9 units

Intensive reading and analysis of major works in historical and social studies of science and technology. Introduction to current methodological approaches, centered around two primary questions: how have science and technology evolved as human activities, and what roles do they play in society? Preparation for graduate work in the field of science and technology studies and introduction to research resources and professional standards.

*D. I. Kaiser***Advanced Seminars****STS.310 History of Science**

Prereq: Permission of instructor

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: G (Fall)

3-0-9 units

Intensive reading and analysis of key works in the history and historiography of science. Introduces students to basic interpretive issues, bibliographic sources, and professional standards. Topics change from year to year.

*R. W. Scheffler***STS.320[J] Environmental Conflict**

Same subject as 21A.429[J]

Prereq: Permission of instructor

Acad Year 2018-2019: G (Spring)

Acad Year 2019-2020: Not offered

3-0-9 units

Explores the complex interrelationships among humans and natural environments, focusing on non-western parts of the world in addition to Europe and the United States. Use of environmental conflict to draw attention to competing understandings and uses of "nature" as well as the local, national and transnational power relationships in which environmental interactions are embedded. In addition to utilizing a range of theoretical perspectives, subject draws upon a series of ethnographic case studies of environmental conflicts in various parts of the world.

*C. Walley***STS.330[J] History and Anthropology of Medicine and Biology**

Same subject as 21A.319[J]

Prereq: Permission of instructor

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: G (Spring)

3-0-9 units

See description under subject 21A.319[J].

S. Helmreich

STS.340 Introduction to the History of Technology

Prereq: Permission of instructor
 Acad Year 2018-2019: G (Spring)
 Acad Year 2019-2020: Not offered
 3-0-9 units

Introduction to the consideration of technology as the outcome of particular technical, historical, cultural, and political efforts, especially in the United States during the 19th and 20th centuries. Topics include industrialization of production and consumption, development of engineering professions, the emergence of management and its role in shaping technological forms, the technological construction of gender roles, and the relationship between humans and machines.

M. R. Smith, D. Mindell

STS.360[]] Ethnography

Same subject as 21A.829[]]
 Prereq: None. *Coreq: 21A.859[]]*; permission of instructor
 Acad Year 2018-2019: Not offered
 Acad Year 2019-2020: G (Spring)
 3-0-9 units

Practicum-style course in anthropological methods of ethnographic fieldwork and writing. Depending on student experience in ethnographic reading and practice, subject combines reading ethnographies in anthropological and science studies with formulating and pursuing ethnographic work in local labs, companies, or other sites. Preference to HASTS, CMS, HTC and Sloan graduate students.

M. Fischer

STS.412 Quantification

Prereq: None
 Acad Year 2018-2019: Not offered
 Acad Year 2019-2020: G (Spring)
 3-0-9 units

Surveys research on quantification, the practice of using numerical data and calculation to analyze, order, and control. Begins by examining historical accounts of the rise of quantitative methods and values since c. 1600. Goes on to explore the dynamics and consequences of quantification across a range of modern domains, including science, politics, governance, health, education, crime, law, economic development, finance, and environmental regulation. Readings drawn from STS, history, anthropology, sociology, and philosophy.

W. Deringer

STS.414[]] Risk, Fortune, and Futurity (New)

Same subject as 21H.984[]]
 Prereq: None
 G (Spring)
 3-0-9 units

See description under subject 21H.984[]]. Open to undergraduates with permission of instructor; consult department for details.

W. Deringer, C. Horan

STS.417 STS Seminar on the Global South

Prereq: None
 Acad Year 2018-2019: G (Spring)
 Acad Year 2019-2020: Not offered
 3-0-9 units

Covers Africa and its diaspora, Latin America and the Caribbean, the Middle East, Southeast Asia and Asia, and Oceania. Seeks to explore meanings of science and technology from traditions, experiences, and literatures of these regions; to understand encounters and outcomes of endogenous and inbound ideas, artifacts, and practice; and to engage European and North American science, technology, and society (STS) in dialogue with these literatures. Provides a global view of STS in an increasingly interconnected world. Focuses on peoples of the Global South as innovative intellectual agents, not just victims of technology or its appropriators.

C. Mavhunga

STS.418 Science and Technology in South Asia: Perspectives from History and Anthropology

Prereq: None
 Acad Year 2018-2019: Not offered
 Acad Year 2019-2020: G (Fall)
 3-0-9 units

Surveys transformations of science and technology in colonial and postcolonial South Asia, 19th-21st centuries. Explores colonial science paradigms, the colony as an experimental space, the scientifically planned postcolonial state, alternative science movements, genetic experimentations for food sovereignty, and most recently, the region's role as a node in a global regimes of biotech and IT. Discussions address the scholarly and practical constructions of western, global, non-western and indigenous science, and the analytic limits and salience of such categories. Readings include works in history, anthropology and literature.

D. Banerjee

STS.419 Global Science, Technology and Society

Prereq: Permission of instructor
 Acad Year 2018-2019: Not offered
 Acad Year 2019-2020: G (Spring)
 3-0-9 units

Going beyond issues of brain drain and brain circulation, explores how contemporary science and technology innovations look from, and are being created in, parts of the world other than the US and Europe. Examines new forms of science and technology institutions, harmonization and intellectual property constraints, and distributed knowledge. Discusses MIT's role in global STS issues and challenges students to think about how they can effectively apply their expertise in their home countries. Open to upperclassmen with permission of instructor.

M. Fischer

STS.425 History of Manufacturing in America

Subject meets with STS.026
 Prereq: None
 Acad Year 2018-2019: Not offered
 Acad Year 2019-2020: G (Fall)
 3-0-9 units

Introductory survey of fundamental innovations and transitions in American manufacturing from the colonial period to the mid-twentieth century. Primary emphasis on textiles and metalworking, with particular attention to the role of the machine tool industry in the American manufacturing economy. Students taking graduate version are expected to explore the material in greater depth.

M. R. Smith

STS.427 The Civil War and the Emergence of Modern America: 1861-1890

Subject meets with 21H.205[J], STS.027[J]
 Prereq: None
 Acad Year 2018-2019: G (Fall)
 Acad Year 2019-2020: Not offered
 3-0-9 units

Using the American Civil War as a baseline, considers what it means to become "modern" by exploring the war's material and manpower needs, associated key technologies, and how both influenced the United States' entrance into the age of "Big Business." Readings include material on steam transportation, telegraphic communications, arms production, naval innovation, food processing, medicine, public health, management methods, and the mass production of everything from underwear to uniforms – all essential ingredients of modernity. Students taking graduate version complete additional assignments.

M. R. Smith

STS.429 Food and Power

Prereq: Permission of instructor
 Acad Year 2018-2019: Not offered
 Acad Year 2019-2020: G (Spring)
 3-0-9 units

Anthropological and historical analysis of food production, processing, and consumption in the US and globally. Emphasizes the social and technical practices of raising crops and livestock; efforts to preserve as well as create new foods; the industrialization and de-industrialization of food; the relation between food supply and safety and the state; the role of ethnicity and gender in consumption patterns; and the historical and cultural act of eating. STS.250[J] recommended.

D. Fitzgerald

STS.441 Technology and Self: Technology and Conversation

Prereq: None
 Acad Year 2018-2019: Not offered
 Acad Year 2019-2020: G (Fall)
 2-0-10 units

Explores the relationship between technology and conversation, with an emphasis on conversation in our digital age when so many say they would rather text than talk. Topics center on the psychology of online life, such as the way in which we both share and withhold information about the self. Discussion about the ways new kinds of online conversation are playing out in education, the workplace, and in families and what the changes in conversation mean for collaboration, innovation, and leadership. Readings include works in history, literature, anthropology, psychology, and linguistics. Open to undergraduates by permission of instructor. Limited to 15; no listeners.

S. Turkle

STS.443 Technology and Self: Science, Technology, and Memoir

Subject meets with STS.043
 Prereq: Permission of instructor
 Acad Year 2018-2019: Not offered
 Acad Year 2019-2020: G (Fall)
 2-0-7 units

Focuses on the memoir as a window onto the relationship of the scientist, engineer, and technologist to his or her work. Studies the subjective side of technology and the social and psychological dimensions of technological change. Students write about specific objects and their role in their lives - memoir fragments. Readings concern child development theory and the role of technology in development. Explores the connection between material culture, identity, cognitive and emotional development. Students taking graduate version complete additional assignments. Limited to 15; no listeners.

S. Turkle

STS.444 Technology and Self: Things and Thinking

Subject meets with STS.044

Prereq: Permission of instructor

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: G (Fall)

2-0-7 units

Explores emotional and intellectual impact of objects. The growing literature on cognition and “things” cuts across anthropology, history, social theory, literature, sociology, and psychology and is of great relevance to science students. Examines the range of theories, from Mary Douglas in anthropology to D.W. Winnicott in psychoanalytic thinking, that underlies “thing” or “object” analysis. Students taking graduate version complete additional assignments. Limited to 15; no listeners.

S. Turkle

STS.450 The Global History of Medicine and Public Health

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: G (Spring)

3-0-9 units

Surveys recent and canonical scholarship on the history of medicine and public health as a global set of events starting in the 15th century. Examines themes including race, gender, class, imperialism, warfare, religion, governance, indigenous knowledge, disciplinarily, the body, and citizenship. Emphasizes the development of methods and historiographic approaches for studying these themes.

R. W. Scheffler

STS.454 Science and Technology in the Museum Environment

Prereq: None

Acad Year 2018-2019: G (Fall)

Acad Year 2019-2020: Not offered

3-0-9 units

Examines the ways museums preserve the material culture of science and technology and present it distinctively to a mass audience. Focuses on challenges and opportunities of preserving and presenting science and technology in the museum environment. Students review recent work in museum studies as it relates specifically to science, medicine, and technology; review a major gallery or exhibition locally; and have an opportunity to participate in a collections- or communications-related research project in the MIT Museum.

J. Durant

STS.460 Histories of Information, Communication, and Computing Technologies

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: G (Spring)

3-0-9 units

Introduction to the historical study of information, communication, and computing technologies with a focus on the United States. Pairs analysis of a multidisciplinary reading list with in-depth discussions of research methods and writing for academic publications. Later weeks of the course adapt to student interests and are determined by students in consultation with the instructor. Limited to 15.

J. S. Light

STS.462 Social and Political Implications of Technology

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: G (Spring)

3-0-9 units

Historical and contemporary studies are used to explore the interaction of technology with social and political values. Emphasis on how technological devices, structures, and systems influence the organization of society and the behavior of its members. Examples drawn from the technologies of war, transportation, communication, production, and reproduction.

M. R. Smith

STS.463[J] Technocracy

Same subject as 11.461[J]

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: G (Fall)

3-0-9 units

Survey of the history of efforts to apply scientific methods and technological tools to solve social and political problems, with a focus on the United States since 1850. Topics include: city planning, natural resource management, public education, economic development, quantification and modeling in the social and policy sciences, technology transfer, and political economies of expertise.

J. S. Light

STS.467[] The History of Aviation

Same subject as 16.707[]

Prereq: Permission of instructor

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: G (Spring)

3-0-9 units

Reading course in the history of aviation, focusing on science and technology and cultural and political context. Themes include: the science of aeronautics, pilots and piloting, control systems and electronics, engineering epistemology, infrastructure, industry, government and politics, evolution of aeronautics research, culture and experience, automation and autonomy, role of MIT, literature and film. Case studies of specific systems and engineering projects. Emphasis is on book-length texts, close reading, historical methods of analyzing technological change. Study of social and political dimensions of engineering projects, examination of aviation institutions. Students prepare weekly response papers to readings, make extended presentations to class twice per semester, and submit a final research paper.

D. Mindell

STS.470[] Research Seminar: Human, Remote and Autonomous Systems in Air, Sea, and Space

Same subject as 16.440[]

Prereq: 16.400, 16.453[], or permission of instructor

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: G (Fall)

3-0-9 units

See description under subject 16.440[].

D. A. Mindell

STS.471[] Engineering Apollo: The Moon Project as a Complex System

Same subject as 16.895[]

Prereq: Permission of instructor

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: G (Spring)

4-0-8 units

Detailed technical and historical exploration of the Apollo project to fly humans to the moon and return them safely to Earth as an example of a complex engineering system. Emphasizes how the systems worked, the technical and social processes that produced them, mission operations, and historical significance. Guest lectures by MIT-affiliated engineers who contributed to and participated in the Apollo missions. Students work in teams on a final project analyzing an aspect of the historical project to articulate and synthesize ideas in engineering systems.

D. Mindell

STS.474[] Art, Craft, Science

Same subject as 21A.509[]

Prereq: None

G (Fall)

3-0-9 units

Credit cannot also be received for 21A.501[], STS.074[]

See description under subject 21A.509[].

H. Paxson

STS.477[] Writing: Science, Technology, and Society

Same subject as 21W.820[]

Prereq: 21H.991

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: G (Fall)

3-0-9 units

Examination of different "voices" used to consider issues of scientific, technological, and social concern. Students write frequently and choose among a variety of non-fiction forms: historical writing, social analysis, political criticism, and policy reports. Instruction in expressing ideas clearly and in organizing a thesis-length work. Reading and writing on three case studies drawn from the history of science; the cultural study of technology and science; and policy issues.

K. Manning

STS.481[] Cross-Cultural Investigations: Technology and Development

Same subject as EC.792[], 21A.839[]

Subject meets with EC.702[], 21A.801[], STS.071[]

Prereq: None

Acad Year 2018-2019: Not offered

Acad Year 2019-2020: G (Spring)

3-0-9 units

See description under subject 21A.839[].

C. Walley

STS.482[] Science, Technology, and Public Policy

Same subject as 17.310[], IDS.412[]

Prereq: Permission of instructor

G (Spring)

4-0-8 units

Credit cannot also be received for 17.309[], IDS.055[], STS.082[]

See description under subject 17.310[].

K. Oye, N. Selin

STS.487 Foundations of Information Policy

Subject meets with 6.805[], STS.o85[]

Prereq: Permission of instructor

G (Fall)

3-0-9 units

Studies the growth of computer and communications technology and the new legal and ethical challenges that reflect tensions between individual rights and societal needs. Topics include computer crime; intellectual property restrictions on software; encryption, privacy, and national security; academic freedom and free speech. Students meet and question technologists, activists, law enforcement agents, journalists, and legal experts. Instruction and practice in oral and written communication provided. Students taking graduate version complete additional assignments. Enrollment limited.

H. Abelson, M. Fischer, D. Weitzner

Special Subjects

STS.S91 Special Subject: Science, Technology and Society

Prereq: None

Acad Year 2018-2019: G (Fall)

Acad Year 2019-2020: Not offered

Units arranged

Can be repeated for credit.

Addresses a special topic in Science, Technology and Society which is not offered in the regular curriculum.

Staff

STS.S92 Special Subject: Science, Technology and Society

Prereq: None

G (Fall, IAP, Spring)

Not offered regularly; consult department

Units arranged

Can be repeated for credit.

Addresses subject matter in Science, Technology and Society that is not offered in the regular curriculum.

Staff

Research and Teaching

STS.800 Teaching Science, Technology and Society

Prereq: None

G (Fall, Spring)

Units arranged [P/D/F]

Can be repeated for credit.

For qualified graduate students serving as either a teaching assistant or instructor for subjects in Science, Technology and Society (STS). Enrollment limited by availability of suitable teaching assignments.

Staff

STS.901-STS.904 Independent Study in Science, Technology, and Society

Prereq: Permission of instructor

G (Fall, Spring)

Units arranged

Can be repeated for credit.

For students who wish to pursue special studies or projects at an advanced level with a faculty member of the Program in Science, Technology, and Society.

Staff

STS.THG Graduate Thesis

Prereq: Permission of instructor

G (Fall, IAP, Spring, Summer)

Units arranged

Can be repeated for credit.

Program of graduate research leading to the writing of a PhD thesis, to be arranged by the student with an appropriate MIT faculty member, who is the thesis supervisor.

Staff