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 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:

- At least one STS Tier I subject (http://web.mit.edu/sts/academic/tier1.html)
- Five other STS subjects
- Four subjects related to the historical and social study of science and technology
- STS.091 Critical Issues in STS
- 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:

- At least one STS Tier I subject (http://web.mit.edu/sts/academic/tier1.html)
- At least one STS Tier II subject (http://web.mit.edu/sts/academic/tier2.html)
- Five other STS subjects
- STS.091 Critical Issues in STS
- 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.091, at least one subject from the Tier I list, and at least one subject from the Tier II list.

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<th>STS.091</th>
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<td>Select at least one subject</td>
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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://web.mit.edu/sts) may be obtained from the STS academic administrator, Room E51-163, 617-253-9759.

David I. Kaiser, PhD
Germeshausen Professor of the History of Science
Director, Science, Technology, and Society Program
Professor of Physics

Faculty and Teaching Staff

Professors

- 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
- Professor of the History of Technology

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

- 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

- 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

- Rosalind H. Williams, PhD
- Bern Dibner Professor in the History of Science and Technology
- Professor of Comparative Media Studies/Writing
**Associate Professors**

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

Hanna Rose Shell, PhD  
Associate Professor of Science, Technology, and Society  

**Assistant Professors**

William Deringer, PhD  
Assistant Professor of Science, Technology, and Society  

Robin Scheffler, PhD  
Assistant Professor of Science, Technology, and Society  

**Adjunct Professors**

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

**Professors Emeriti**

Louis L. Bucciarelli Jr, PhD  
Professor Emeritus of Engineering and Technology Studies  

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  

Leon Trilling, PhD  
Professor Emeritus of Aeronautics and Astronautics  
Professor Emeritus of Science, Technology, and Society  

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**Undergraduate Subjects**

**Tier I Subjects**

**STS.001 Technology in American History**

Prereq: None  
U (Spring)  
3-0-9 units. HASS-H; CI-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 2016-2017: Not offered  
Acad Year 2017-2018: U (Spring)  
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.  

_W. Deringer_

**STS.003 The Rise of Modern Science**

Prereq: None  
Acad Year 2016-2017: Not offered  
Acad Year 2017-2018: U (Fall)  
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.  

_W. Deringer, H. R. Shell_
STS.004 Intersections: Science, Technology, and the World
Prereq: None
Acad Year 2016-2017: Not offered
Acad Year 2017-2018: U (Fall)
3-0-9 units. HASS-H

Introduces 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. Teaching modes include guest presenters, discussion groups, field activities, visual media, and a practicum style of learning.
D. Singerman

STS.006[J] Bioethics
Same subject as 24.06[J]
Prereq: None
U (Spring)
3-0-9 units. HASS-H; CI-H

See description under subject 24.06[J].
N. Schüll, V. Urbanek

STS.007 Technology in History
Prereq: None
U (Fall)
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.
C. Mavhunga

STS.008 Technology and Experience
Prereq: None
U (Spring)
3-0-9 units. HASS-S; CI-H

Introduction to the “inner history” of technology: how it affects intimate aspects of human experience from sociological, psychological and anthropological perspectives. Topics include how the internet transforms our experience of time, space, privacy, and social engagement; how entertainment media affects attention, emotion, and creativity; how medical technologies alter the experience of illness, reproduction, and mortality; how pharmaceuticals reshape identity, mood, pain, and pleasure. In-class discussion of readings, short written assignments, final project.
N. Schüll

STS.009 Evolution and Society
Prereq: None
Acad Year 2016-2017: U (Fall)
Acad Year 2017-2018: Not offered
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

STS.010 Neuroscience and Society
Prereq: None
U (Fall)
3-0-9 units. HASS-S; CI-H

Explores social relevance of neuroscience, considering how emerging areas of brain research reflect and reshape social attitudes and agendas. Topics include brain imaging and popular media; neuroscience of empathy, trust, and moral reasoning; new fields of neuroeconomics and neuromarketing; ethical implications of neurotechnologies such as cognitive enhancement pharmaceuticals; neuroscience in the courtroom; and neuroscientific recasting of social problems such as addiction and violence. Guest lectures by neuroscientists, class discussion, and weekly readings in neuroscience, popular media, and science studies.
N. Schüll
Tier II Subjects

STS.023[J] Science, Caste and Gender in India
Same subject as WGS.226[J]
Prereq: None
U (Spring)
3-0-9 units. HASS-H
See description under subject WGS.226[J].
A. Sur

STS.025[J] Making the Modern World: The Industrial Revolution in Global Perspective
Same subject as 21H.285[J]
Prereq: None
Acad Year 2016-2017: Not offered
Acad Year 2017-2018: 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 2016-2017: U (Fall)
Acad Year 2017-2018: Not offered
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[J] The Civil War and the Emergence of Modern America: 1861-1890
Same subject as 21H.205[J]
Subject meets with STS.427
Prereq: Permission of instructor
Acad Year 2016-2017: U (Spring)
Acad Year 2017-2018: 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.032 Energy, Environment, and Society
Prereq: None
Acad Year 2016-2017: U (Spring)
Acad Year 2017-2018: Not offered
3-0-9 units. HASS-H; CI-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.
C. Mavhunga

STS.034 Science Communication: A Practical Guide
Prereq: None
Acad Year 2016-2017: Not offered
Acad Year 2017-2018: 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 policymakers, writing blogs, giving live interviews for broadcast, and creating a prospectus for a science exhibit in the MIT Museum.
J. Durant
**STS.035 Exhibiting Science**
Prereq: One CI-H/CI-HW subject, permission of instructor
Acad Year 2016-2017: Not offered
Acad Year 2017-2018: 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.

_J. Durant_

**STS.042[J] Einstein, Oppenheimer, Feynman: Physics in the 20th Century**
Same subject as 8.225[J]
Prereq: None
Acad Year 2016-2017: U (Spring)
Acad Year 2017-2018: 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.

_D. I. Kaiser_

**STS.043 Technology and Self: Science, Technology, and Memoir**
Subject meets with STS.443
Prereq: None
U (Spring)
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.

_S. Turkle_

**STS.044 Technology and Self: Things and Thinking**
Subject meets with STS.444
Prereq: None
Acad Year 2016-2017: U (Spring)
Acad Year 2017-2018: Not offered
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.

_S. Turkle_

**STS.046[J] The Science of Race, Sex, and Gender**
Same subject as 21A.103[J], WGS.225[J]
Prereq: None
U (Spring)
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 2016-2017: U (Spring)
Acad Year 2017-2018: 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).

_W. Deringer_
STS.048 African Americans in Science, Technology, and Medicine
Prereq: None
U (Fall)
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
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
Acad Year 2016-2017: Not offered
Acad Year 2017-2018: 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.

D. Douglas

STS.056 Science on Screen
Subject meets with STS.456
Prereq: None
Acad Year 2016-2017: U (Spring)
Acad Year 2017-2018: Not offered
2-1-9 units. HASS-A

Examines the linked histories of science, engineering, and documentary film from 1895 to present. In addition to historical study and visual analysis, students produce their own short videos based on archival footage. Provides opportunities to interact with both antiquated and modern technologies of media production and projection. Readings cover topics in film studies, the history of technology, STS, and material culture studies. Includes mandatory weekly screenings and media production assignments, as well as several short writing assignments. Students taking graduate version complete additional and more in-depth assignments.

H. R. Shell

STS.060[J] The Anthropology of Biology
Same subject as 21A.303[J]
Prereq: None
Acad Year 2016-2017: Not offered
Acad Year 2017-2018: U (Fall)
3-0-9 units. HASS-S

See description under subject 21A.303[J].

S. Helmreich

STS.062[J] Drugs, Politics, and Culture
Same subject as 21A.305[J]
Prereq: None
U (Fall)
3-0-9 units. HASS-S

See description under subject 21A.305[J].

A. Moran-Thomas

STS.064[J] DV Lab: Documenting Science through Video and New Media
Same subject as 21A.550[J]
Prereq: None
U (Spring)
3-3-12 units. HASS-A; CI-H

See description under subject 21A.550[J].

C. Walley, C. Boebel
STS.065[J] The Anthropology of Sound
Same subject as 21A.505[J]
Prereq: None
U (Spring)
Not offered regularly; consult department
3-0-9 units. HASS-S
See description under subject 21A.505[J].
S. Helmreich

STS.068[J] Advanced DV Lab: Documenting Science through Video and New Media
Same subject as 21A.551[J]
Prereq: 21A.550[J] or permission of instructor
U (Spring)
3-3-6 units. HASS-A
See description under subject 21A.551[J].
C. Walley, C. Boebel

STS.070[J] Language and Technology
Same subject as 24.913[J], 21A.503[J]
Prereq: None
U (Fall)
3-0-9 units. HASS-S
See description under subject 21A.503[J].
G. Jones

STS.071[J] Cross-Cultural Investigations: Technology and Development
Same subject as EC.702[J], 21A.801[J]
Subject meets with EC.792[J], 21A.839[J], STS.481[J]
Prereq: None
U (Spring)
3-0-9 units. HASS-S
See description under subject 21A.801[J].
C. Walley

STS.074[J] Art, Craft, Science
Same subject as 21A.501[J]
Prereq: None
U (Spring)
3-0-9 units. HASS-S
Credit cannot also be received for 21A.509[J], STS.474[J]
See description under subject 21A.501[J].
H. Paxson

STS.075[J] Technology and Culture
Same subject as 21A.500[J]
Prereq: None
Acad Year 2016-2017: Not offered
Acad Year 2017-2018: U (Fall)
2-0-7 units. HASS-S
See description under subject 21A.500[J].
K. Surkan

STS.080[J] Youth Political Participation
Same subject as 11.151[J]
Prereq: None
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.
J. S. Light

STS.082[J] Science, Technology, and Public Policy
Same subject as 17.309[J], ESD.082[J]
Prereq: None
U (Fall)
4-0-8 units. HASS-S; CI-H
Credit cannot also be received for 17.310[J], ESD.103[J], STS.482[J]
See description under subject 17.309[J].
K. Oye

STS.084[J] Social Problems of Nuclear Energy
Same subject as 22.04[J]
Prereq: None
U (Fall)
3-0-9 units. HASS-S
See description under subject 22.04[J].
R. S. Kemp
**STS.085[J] Foundations of Information Policy**
Same subject as 6.805[J]
Subject meets with STS.487
Prereq: Permission of instructor
U (Fall)
3-0-9 units. HASS-S
See description under subject 6.805[J].
_H. Abelson, M. Fischer, D. Weitzner_

**STS.086[J] Cultures of Computing**
Same subject as 21A.504[J], WGS.276[J]
Prereq: None
U (Spring)
3-0-9 units. HASS-S
See description under subject 21A.504[J].
_S. Helmreich_

**STS.087 Biography in Science**
Prereq: None
U (Fall)
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.088 Africa for Engineers**
Prereq: None
Acad Year 2016-2017: U (Fall)
Acad Year 2017-2018: Not offered
3-0-9 units. HASS-H; CI-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.
_C. Mavhunga_

**STS.089 Technology and Innovation in Africa**
Prereq: None
Acad Year 2016-2017: Not offered
Acad Year 2017-2018: U (Fall)
3-0-9 units. HASS-H
Examines development, environment, public health, and politics in Africa, past and present. Studies indigenous innovations, such as plant/animal domestication, fire making, ecology, mining/metallurgy, architecture, textiles, music, medicine, and finance. Explores impact of incoming factors (e.g., slave trade, colonialism, development aid) on indigenous innovation. Discusses the uses Africans assign to incoming technologies (such as guns, cameras, and information and communication technology) and ideas like democracy and human rights.
_C. Mavhunga_

**STS.091 Critical Issues in STS**
Prereq: One STS Tier I subject or permission of instructor
U (Spring)
2-0-10 units. HASS-E
Can be repeated for credit.
Analyzes current events and issues from the perspective of Science, Technology and Society. Students explore a chosen topic and develop their own unique analysis, applying the ideas and concepts of STS. Draws on the recent work of STS faculty, along with the concepts and methods that inspired them. Includes current and classic readings in STS; frequent short writing assignments, oral presentations, and collective discussion; and an independently defined research project. Occasional guest visits by STS faculty and advanced graduate students.
_Staff_

**Special Subjects**

**STS.520, STS.521 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.095, STS.096 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.095 is letter-graded; STS.096 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.

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
G (Spring)
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 2016-2017: Not offered
Acad Year 2017-2018: 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 and Social Change**
Same subject as 21A.429[J]
Prereq: Permission of instructor
Acad Year 2016-2017: G (Spring)
Acad Year 2017-2018: 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 2016-2017: Not offered
Acad Year 2017-2018: G (Spring)
3-0-9 units

Explores recent historical and anthropological approaches to the study of medicine and biology. Topics might include interaction of disease and society; science, colonialism, and international health; impact of new technologies on medicine and the life sciences; neuroscience and psychiatry; race, biology and medicine. Specific emphasis varies from year to year.
*S. Helmreich*

**STS.340 Introduction to the History of Technology**
Prereq: Permission of instructor
Acad Year 2016-2017: G (Fall)
Acad Year 2017-2018: 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.
*D. Mindell, J. S. Light*

**STS.360[J] Ethnography**
Same subject as 21A.829[J]
Prereq: Permission of instructor; Coreq: 21A.859[J]
Acad Year 2016-2017: G (Fall)
Acad Year 2017-2018: Not offered
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.
*M. Fischer*

**STS.413 Energy: Humanistic Perspectives**
Prereq: None
Acad Year 2016-2017: G (Spring)
Acad Year 2017-2018: Not offered
3-0-9 units

Explores energy from a humanities perspective, including its place in history and society, architectures, security, conflicts, politics, climate change, and pollution. Covers all continents and time periods, from the invention of fire to present. Emphasizes the different energy cultures and practices as reflected in anthropology, history, literature, philosophy, religious studies, art history, and the arts.
*C. Mavhunga*
STS.419 Global Science, Technology and Society
Prereq: Permission of instructor
Acad Year 2016-2017: G (Spring)
Acad Year 2017-2018: Not offered
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.

M. Fischer

STS.425 History of Manufacturing in America
Subject meets with STS.026
Prereq: None
Acad Year 2016-2017: G (Fall)
Acad Year 2017-2018: Not offered
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 2016-2017: G (Spring)
Acad Year 2017-2018: 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[J] Food and Power
Same subject as 21A.439[J]
Prereq: Permission of instructor
Acad Year 2016-2017: G (Spring)
Acad Year 2017-2018: Not offered
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.

H. Paxson

STS.433 Technology, War, and the American Experience: 1650-1950
Prereq: Permission of instructor
G (Spring)
Not offered regularly; consult department
3-0-9 units

Analyzes the development, deployment, and impacts of technology in warfare, focusing primarily on American military affairs from the industrial revolution to the post-World War II period. Also explores how and why the military played a role in American industrialization and influenced the larger economy and society, taking into consideration current discussions among political economists and historians.

M. R. Smith

STS.434 Mobility & Global Society
Prereq: None
G (Spring)
Not offered regularly; consult department
3-0-9 units

Examines the interaction of transport, communication, and bodies (people, animals, insects, and microbes). Explores the origins of transport systems (from walking, wagons and automobiles, to canoes, ships, and aircraft), then studies the communication media triggered by, or existing in parallel with, each system. Transport examples include runners, the use of sound and visual signals, telegraph, telephone, cell phone, and the Internet. Communication mediums include ‘useful’ and ‘deadly’/’scary’ technology, information and substances.

C. Mavhunga
ST.441 Technology and Self: Technology and Conversation
Prereq: None
G (Spring)
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.
S. Turkle

ST.443 Technology and Self: Science, Technology, and Memoir
Subject meets with STS.043
Prereq: Permission of instructor
G (Spring)
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.
S. Turkle

ST.444 Technology and Self: Things and Thinking
Subject meets with STS.044
Prereq: Permission of instructor
Acad Year 2016-2017: G (Spring)
Acad Year 2017-2018: Not offered
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.
S. Turkle

ST.449[J] Introduction to Global Medicine: Bioscience, Technologies, Disparities, Strategies
Same subject as HST.934[J]
Prereq: None
G (Spring)
2-0-1 units
See description under subject HST.934[J].
M. Fischer, E. James, M. J. Good

ST.452 Living in a Technological World
Prereq: None
G (Fall)
Not offered regularly; consult department
3-0-9 units
Explores the consequences when human beings dwell in a predominantly self-constructed environment, from the standpoint of humanistic inquiry. Topics include the concept of lifeworld; the end of the world frontier; advancing edges and empty places; the visible landscape as a register of technological change; world alienation; loss of human habitat; redefining exploration; and imagining a rehumanized world. Readings, both fiction and non-fiction, include works by authors such as H. Arendt, M. Berman, T. J. Clark, L. Marx, W. Morris, J. Verne, and R. L. Stevenson.
R. H. Williams

ST.454 Science and Technology in the Museum Environment
Prereq: None
Acad Year 2016-2017: G (Spring)
Acad Year 2017-2018: 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.456 Science on Screen
Subject meets with STS.056
Prereq: None
Acad Year 2016-2017: G (Spring)
Acad Year 2017-2018: Not offered
2-1-9 units
Examines the linked histories of science, engineering, and documentary film from 1895 to present. In addition to historical study and visual analysis, students produce their own short videos based on archival footage. Provides opportunities to interact with both antiquated and modern technologies of media production and projection. Readings cover topics in film studies, the history of technology, STS, and material culture studies. Includes mandatory weekly screenings and media production assignments, as well as several short writing assignments. Students taking graduate version complete additional and more in-depth assignments.
H. R. Shell

STS.460 Histories of Information, Communication, and Computing Technologies
Prereq: None
Acad Year 2016-2017: G (Spring)
Acad Year 2017-2018: Not offered
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.
J. S. Light

STS.462 Social and Political Implications of Technology
Prereq: None
Acad Year 2016-2017: G (Fall)
Acad Year 2017-2018: Not offered
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 2016-2017: Not offered
Acad Year 2017-2018: 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[j] The History of Aviation
Same subject as 16.707[j]
Prereq: Permission of Instructor
Acad Year 2016-2017: Not offered
Acad Year 2017-2018: 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

Same subject as 16.440[j]
Prereq: 16.400, 16.453[j], or permission of instructor
G (Fall)
3-0-9 units
See description under subject 16.440[j].
D. A. Mindell
STS.471[J] Engineering Apollo: The Moon Project as a Complex System
Same subject as 16.895[J], ESD.30[J]
Prereq: Permission of instructor
Acad Year 2016-2017: G (Spring)
Acad Year 2017-2018: Not offered
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[J] Art, Craft, Science
Same subject as 21A.509[J]
Prereq: None
G (Spring)
3-0-9 units
Credit cannot also be received for 21A.501[J], STS.074[J]

See description under subject 21A.509[J].

H. Paxson

Same subject as 21W.820[J]
Prereq: 21H.991[J]
Acad Year 2016-2017: G (Spring)
Acad Year 2017-2018: Not offered
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[J] Cross-Cultural Investigations: Technology and Development
Same subject as EC.792[J], 21A.839[J]
Prereq: Permission of instructor
Subject meets with EC.702[J], 21A.801[J], STS.071[J]
Acad Year 2016-2017: Not offered
G (Spring)
3-0-9 units

See description under subject 21A.839[J].

C. Walley

STS.482[J] Science, Technology, and Public Policy
Same subject as 17.310[J], ESD.103[J]
Prereq: Permission of instructor
G (Fall)
4-0-8 units
Credit cannot also be received for 17.309[J], ESD.082[J], STS.082[J]

See description under subject 17.310[J].

K. Oye

STS.487 Foundations of Information Policy
Subject meets with 6.805[J], STS.085[J]
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.

H. Abelson, M. Fischer, D. Weitzner

Special Subjects

STS.S91 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 a special topic in Science, Technology and Society which is not offered in the regular curriculum.

Staff
**STS.92 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).  
*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*