SCIENCE, TECHNOLOGY, AND SOCIETY

Courses offered by the Program in Science, Technology, and Society are listed under the subject code STS on the ExploreCourses web site (https://explorecourses.stanford.edu/search/?q=STS&view=catalog&page=0&academicYear=&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&collapse=&filter-departmentcode-STS=on&filter-catalognumber-STS=on&filter-coursestatus-Active=on&filter-catalognumber-STS=on).

Mission of the Undergraduate Program in Science, Technology, and Society

The Program in Science, Technology, and Society (STS) aims to provide students with an interdisciplinary framework through which to understand the complex interactions of science, technology and the social world. To major in STS, students work through a common core of courses drawn from the social sciences, the humanities, the natural and physical sciences and engineering. Students pursue coursework in one of seven specialized areas:

- Catastrophic Risks and Solutions
- Communication and Media
- Innovation and Organization
- Life Sciences and Health
- Politics and Policy
- Social Dynamics of Data and Information
- Self-Designed Concentration

Students may also undertake research in affiliated laboratories and through the honors program for course units. All students complete a capstone project, either by taking one of the senior capstone courses (STS 200) or by applying for and completing an STS honors thesis. Students are encouraged to pursue mastery in at least one field from within the humanities or social sciences and at least one field from within the sciences or engineering. Majors may declare either a B.A. or a B.S. degree (see the specific requirements for each degree).

The Program's affiliated faculty represent over a dozen departments, including Anthropology, Communication, Computer Science, Education, Electrical Engineering, History, Law, Management Science and Engineering, Political Science and Sociology. By learning to bring such a rich collection of disciplinary approaches to bear on questions of science and technology, students graduate uniquely equipped to succeed in professions that demand fluency with both technical and social frameworks. Recent graduates of STS have entered top-ranked Ph.D. and MBA programs and forged successful careers in a variety of fields, including business, engineering, law, public service, medicine and academia.

Learning Outcomes (Undergraduate)

The Program expects undergraduate majors to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the Program in Science, Technology, and Society. Students are expected to demonstrate:

1. A knowledge of core theories and methods in the interdisciplinary field of STS.
2. An ability to deploy these theories and methods to analyze interactions between science, technology and society in particular historical and cultural contexts.
3. An ability to critically evaluate empirical evidence and theoretical claims in STS-related debates.
4. An ability to communicate clearly and persuasively about STS issues to a general audience in multiple media including oral presentation and writing.

Advising and Course Selection

The Program in Science, Technology, and Society offers an advising process that includes faculty, staff and peer advisers. Prospective majors must first meet with a peer adviser and then with the Program's Student Services Officer to determine which degree they will pursue (the B.A. or B.S.) and how they will fulfill the Program's basic requirements. When they are ready to declare, they meet with the Program's Student Services Officer to submit their degree plan and then the Associate Director reviews the coursework for intellectual coherence. Majors are then assigned to a faculty adviser who serves as an intellectual mentor and helps them identify the core questions driving their interest in the field. The Program also sponsors a wide variety of events designed to help students meet their colleagues and Program alumni, discover research and internship opportunities, and make their way toward the career of their choice.

STS Core

The program offers a Bachelor of Arts and Bachelor of Science in Science, Technology, and Society. Both degree programs require that the student complete the STS Core.

		Units
With a grade of 'C' or higher in each course, complete 8 courses satisfying the following requirements:		
A. Gateway Requirement		
STS 1	The Public Life of Science and Technology	4
B. Disciplinary Requirement Note 1 & 2		
Six courses; one of these courses must be a STS WIM course and at least one of these courses must be a STS Global course.		
1. Social Sciences and Humanities Courses (complete 4 courses) Note 3 & 4		13-20
	ANTHRO 41	Genes and Identity	
	ANTHRO 82	Medical Anthropology	
	ANTHRO 93B	Prefield Research Seminar: Non-Majors	
	ANTHRO 126	Urban Culture in Global Perspective	
	ANTHRO 132C	Technology and Inequality	
	ANTHRO 138	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise	
	ANTHRO 186	Culture and Madness: Anthropological and Psychiatric Approaches to Mental Illness	
	CLASSICS 151	Ten Things: An Archaeology of Design	
	COMM 120W	The Rise of Digital Culture	
	COMM 137W	The Dialogue of Democracy	
	COMM 142W	Media Economics	
	COMM 177SW	Specialized Writing and Reporting: Sports Journalism	
	COMM 184	Race and Media	
	COMM 186W	Media, Technology, and the Body	
	COMPLIT 207	Why is Climate Change Un-believable? Interdisciplinary Approaches to Environmental Action	
	CSRE 230	Law, Order, & Algorithms	
	ECON 106	World Food Economy	
	EDUC 120	Sociology of Science	
	EDUC 151	The Future of Information	

EDUC 320	Sociology of Science	
ENGLISH 184C	Data and Knowledge in the Humanities	
HISTORY 44Q	Gendered Innovations in Science, Medicine, Engineering, and Environment	
HISTORY 79C	The Ethical Challenges of the Climate Catastrophe	
HISTORY 140	World History of Science	
HISTORY 140A	The Scientific Revolution	
HISTORY 144	Sex, Gender, and Intersectional Analysis in Science, Medicine, Engineering, and Environment	
HISTORY 179C	The Ethical Challenges of the Climate Catastrophe	
HISTORY 203C	History of Ignorance	
HISTORY 234P	The Age of Plague: Medicine and Society, 1300-1750	
HISTORY 235D	When Worlds Collide: The Trial of Galileo	
MS&E 130	Information Networks and Services	
MS&E 330	Law, Order, & Algorithms	
PHIL 167A	Philosophy of Biology	
POLISCI 114S	International Security in a Changing World	
POLISCI 233F	Science, technology and society and the humanities in the face of the looming disaster	
RELIGST 3	The Religious Life of Things	
SOC 114	Economic Sociology	
STS 151	The Future of Information	
STS 166	Knowledge and Information Infrastructures	
STS 181	Techno-metabolism: Technology, Society, and the Anthropocene	
STS 191W	Doing STS: Introduction to Research	
2. Engineering and Science Courses (complete 2 courses)		**6-10**
BIOE 122	BioSecurity and Pandemic Resilience	
BIOE 131	Ethics in Bioengineering	
CEE 64	Air Pollution and Global Warming: History, Science, and Solutions	
CEE 70	Environmental Science and Technology	
CEE 118X	Shaping the Future of the Bay Area	
CEE 118Y	Shaping the Future of the Bay Area	
CEE 118Z	Shaping the Future of the Bay Area	
CS 181W	Computers, Ethics, and Public Policy	
CS 182W	Ethics, Public Policy, and Technological Change	
CSRE 230	Law, Order, & Algorithms	
EARTH 2	Climate and Society	
EARTHSYS 112	Human Society and Environmental Change	
EARTHSYS 177C	Specialized Writing and Reporting: Health and Science Journalism	
EARTHSYS 227	Decision Science for Environmental Threats	
ENGR 60	Engineering Economics and Sustainability	
MS&E 193	Technology and National Security: Past, Present, and Future	
C. Senior Requirement		**4-10**

All students must complete a capstone project, either by taking one of the senior capstone courses (STS 200) or by applying for and completing an STS honors thesis (STS 299).

STS 200N	Funkentelechy: Technologies, Social Justice and Black Vernacular Cultures	5

STS 200Q	Sociology of Science	3-4
STS 200U	The Age of Plague: Medicine and Society, 1300-1750	5
STS 299	Advanced Individual Work	1-5
Total Units		41-63

[1]WIM courses: BIOE 131, COMM 120W, COMM 137W, CS 181W, EARTHSYS 177C, HISTORY 140A   STS 191W

[2]Global courses: ANTHRO 41, ANTHRO 82, ANTHRO 126, ANTHRO 132C, ANTHRO 138, COMPLIT 207, ECON 106, ENGLISH 184C, HISTORY 140, HISTORY 44Q, HISTORY 144, HISTORY 234P, CEE 64, POLISCI 114S, POLISCI 233F

[3]May only take HISTORY 140A or HISTORY 232F (not offered 20-21).

[4]May only take HISTORY 144 or HISTORY 44Q.

Concentration Areas

In addition to the Core requirements common to all STS students, a minimum of 50 units, at least twelve courses, are required from among those designated on the appropriate Concentration Area course list (available in the Concentration Areas tab (p. 3) and on the STS web site). All courses must be taken for a letter grade if offered and may not be double-counted with core course work. Students may count no more than two course petitions outside the list of approved Concentration Area courses toward their STS degree plan. Thematic concentrations are organized around an STS-related area or topic:

1. Catastrophic Risks and Solutions

2. Communication and Media

3. Innovation and Organization

4. Life Sciences and Health

5. Politics and Policy

6. Self-Designed Concentration

7. Social Dynamics of Data and Information

A student pursuing a Bachelor of Arts degree must take at least 8 classes from the Socio-Cultural Course menu, including at least 3 designated as Concentration Core and at least 4 classes from the Technical Course menus.

A student pursuing a Bachelor of Science degree must take at least 8 classes from the Technical Course menu, and at least 4 classes from the Socio-Cultural Course menus, including at least 3 designated as Concentration Core.

Students in both degree programs are encouraged to pursue sequences of courses that build on one another to increase the coherence of their program and give depth to their skill set and knowledge related to STS.

Alternatively, subject to program approval, a student may choose to design a self-designed concentration. Students interested in designing their own concentration must work with the associate director and have their proposal approved at least 2 quarters prior to your graduating quarter. A proposal (5 to 10 pages) should (a) describe your intellectual objectives in detail, (b) explain why a self-designed concentration is the optimal way to pursue these objectives (as opposed to the five STS concentrations or other majors at Stanford), and (c) list at least 12 courses and 50 units that comprise the plan of study. Students with a self-designed concentration must fulfill the same core requirements as

other STS students. More information can be found on the STS website (https://sts.stanford.edu/major-sts/thematic-concentrations/).

Each student's Concentration Area, certified or self-designed, requires the approval of the STS Associate Director.

Concentration Area Course Lists
Catastrophic Risks and Solutions

Thematic concentration in Catastrophic Risks and Solutions:

		Units
Socio-Cultural Courses		
AMSTUD 106A	A.I.: Artificial Intelligence in Fiction	
ANTHRO 154C	Animism, Gaia, and Alternative Approaches to the Environment	
BIOE 122	BioSecurity and Pandemic Resilience	
BIOE 131	Ethics in Bioengineering	
CEE 64	Air Pollution and Global Warming: History, Science, and Solutions	
CEE 107A	Understanding Energy	
CEE 176B	100% Clean, Renewable Energy and Storage for Everything	
CEE 265E	Adaptation to Sea Level Rise and Extreme Weather Events	
CEE 265F	Environmental Governance and Climate Resilience	
CLASSICS 382	High-Stakes Politics: Case Studies in Political Philosophy, Institutions, and Interests	
COMPLIT 207	Why is Climate Change Un-believable? Interdisciplinary Approaches to Environmental Action	
COMPLIT 371	Critical Theory and Ecology: A Cross-Cultural Perspective	
CSRE 125E	Shades of Green: Redesigning and Rethinking the Environmental Justice Movements	
CSRE 226D	The Holocaust: Insights from New Research	
DESINST 245	Redesigning Post-Disaster Finance	
EARTHSYS 102	Fundamentals of Renewable Power	
EARTHSYS 112	Human Society and Environmental Change	
EARTHSYS 160	Sustainable Cities	
EARTHSYS 177C	Specialized Writing and Reporting: Health and Science Journalism	
EARTHSYS 180	Principles and Practices of Sustainable Agriculture	
EARTHSYS 185	Feeding Nine Billion	
EARTHSYS 227	Decision Science for Environmental Threats	
ECON 17N	Energy, the Environment, and the Economy	
ECON 106	World Food Economy	
ECON 155	Environmental Economics and Policy	
ENVRES 222	Climate Law and Policy	
ETHICSOC 136R	Introduction to Global Justice	
FRENCH 265	The Problem of Evil in Literature, Film, and Philosophy	
FRENCH 365	The Problem of Evil in Philosophy, Literature, and Film	
HISTORY 179C	The Ethical Challenges of the Climate Catastrophe	
HISTORY 203C	History of Ignorance	
HISTORY 234P	The Age of Plague: Medicine and Society, 1300-1750	
HUMBIO 153	Parasites and Pestilence: Infectious Public Health Challenges	
INTLPOL 200	The Social & Economic Impact of Artificial Intelligence	
INTLPOL 217	The Future of Global Cooperation	
INTLPOL 240	Contemporary Issues in International Security	
INTLPOL 259A	Research Seminar on Cybersecurity: Automotive Safety, Security, and Privacy	
INTNLREL 135A	International Environmental Law and Policy: Oceans and Climate Change	
INTNLREL 145	Genocide and Humanitarian Intervention	
LAW 807B	Policy Practicum: What we can do to Mitigate Climate Warming	
LAW 2504	Environmental Law and Policy	
LAW 2513	Climate: Politics, Finance, and Infrastructure	
LAW 2515	Environmental Justice	
MED 224	Social Entrepreneurship and Innovation Lab (SE Lab) - Human & Planetary Health	
MS&E 92Q	International Environmental Policy	
MS&E 193	Technology and National Security: Past, Present, and Future	
MS&E 330	Law, Order, & Algorithms	
NATIVEAM 162	Tribal Economic Development and Sustainability	
OSPPARIS 91	The Future of Globalization: Economics, Politics and the Environment	
POLISCI 114S	International Security in a Changing World	
POLISCI 227B	Environmental Governance and Climate Resilience	
PUBLPOL 116	Climate Perspectives: Climate Science, Impacts, Policy, Negotiations, and Advocacy	
PUBLPOL 166	The Politics of Epidemics	
PWR 2STA	Writing & Rhetoric 2: Ethics and AI	
STS 1	The Public Life of Science and Technology	
STS 51A	Race in Science	
STS 51B	Race in Technology	
STS 51C	Race in Medicine	
STS 190	Environment and Society	
STS 191W	Doing STS: Introduction to Research	
STS 200T	Racial Justice in the Nuclear Age	
THINK 65	Preventing Human Extinction	
Technical Courses		
BIO 138	Ecosystem Services: Frontiers in the Science of Valuing Nature	
CEE 70	Environmental Science and Technology	
CEE 118X	Shaping the Future of the Bay Area	
CEE 118Y	Shaping the Future of the Bay Area	
CEE 118Z	Shaping the Future of the Bay Area	
CEE 166B	Water Resources and Hazards	
CEE 263C	Weather and Storms	
CEE 274D	Pathogens and Disinfection	
CEE 278A	Air Pollution Fundamentals	

CEE 287	Earthquake Resistant Design and Construction
CEE 288	Introduction to Performance Based Earthquake Engineering
CEE 296	Regional Seismic Risk Analysis and Risk Management
CEE 297M	Managing Critical Infrastructure
COMPMED 123	Immunology of Infectious Disease
CS 21SI	AI for Social Good
CS 81SI	AI Interpretability and Fairness
CS 155	Computer and Network Security
CS 221	Artificial Intelligence: Principles and Techniques
CS 224N	Natural Language Processing with Deep Learning
CS 224W	Machine Learning with Graphs
CS 229	Machine Learning
CS 230	Deep Learning
CS 231N	Convolutional Neural Networks for Visual Recognition
CS 236	Deep Generative Models
CS 255	Introduction to Cryptography
CS 273B	Deep Learning in Genomics and Biomedicine
CS 335	Fair, Accountable, and Transparent (FAccT) Deep Learning
CS 372	Artificial Intelligence for Disease Diagnosis and Information Recommendations
CS 421	Designing AI to Cultivate Human Well-Being
DESINST 240	Designing Machine Learning: A Multidisciplinary Approach
EARTH 2	Climate and Society
EARTHSYS 101	Energy and the Environment
EARTHSYS 111	Biology and Global Change
EARTHSYS 114	Global Change and Emerging Infectious Disease
EASTASN 217	Health and Healthcare Systems in East Asia
ENERGY 101	Energy and the Environment
ENERGY 104	Sustainable Energy for 9 Billion
ESS 102	Scientific Basis of Climate Change
ESS 305	Climate Change: An Earth Systems Perspective
GEOLSCI 6	Data Science for Geoscience
GEOPHYS 90	Earthquakes and Volcanoes
GEOPHYS 201	Frontiers of Geophysical Research at Stanford
GEOPHYS 220	Ice, Water, Fire
INDE 263	Microbiology and Infectious Diseases I
MATSCI 144	Thermodynamic Evaluation of Green Energy Technologies
MATSCI 156	Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution
MS&E 243	Energy and Environmental Policy Analysis
MS&E 394	Advanced Methods in Modeling for Climate and Energy Policy
PHYSICS 201	The Physics of Energy and Climate Change
STATS 101	Data Science 101
SUST 261	Art and Science of Decision Making

Communication and Media

Thematic concentration in Communication and Media:

Units

Socio-Cultural Courses

AFRICAAM 194	Topics in Writing & Rhetoric: Contemporary Black Rhetorics: Black Twitter and Black Digital Cultures
AMSTUD 96	Signal to Noise: The Sounds of American Culture
AMSTUD 133	Technology and American Visual Culture
AMSTUD 143X	Starstuff: Space and the American Imagination
ANTHRO 132C	Technology and Inequality
ARTHIST 164A	Technology and the Visual Imagination
ARTHIST 245	Art, Business & the Law
ARTSTUDI 173E	Cell Phone Photography
ARTSTUDI 174B	Creativity in the Age of Facebook: Making Art for and from Networks
ARTSTUDI 236	Future Media, Media Archaeologies
COMM 106	Communication Research Methods
COMM 108	Media Processes and Effects
COMM 120W	The Rise of Digital Culture
COMM 124	Truth, Trust, and Tech
COMM 137W	The Dialogue of Democracy
COMM 142W	Media Economics
COMM 154	The Politics of Algorithms
COMM 166	Virtual People
COMM 172	Media Psychology
COMM 184	Race and Media
COMM 186W	Media, Technology, and the Body
COMM 230A	Digital Civil Society
COMM 230B	Digital Civil Society
COMM 230C	Digital Civil Society
COMM 286	Media, Technology, and the Body
CS 181	Computers, Ethics, and Public Policy
CS 182	Ethics, Public Policy, and Technological Change
EARTHSYS 177C	Specialized Writing and Reporting: Health and Science Journalism
EDUC 120	Sociology of Science
EDUC 226	Curating Experience: Representation in and beyond Museums
EDUC 320	Sociology of Science
ENGLISH 184C	Data and Knowledge in the Humanities
ENGR 145	Technology Entrepreneurship
FILMSTUD 6	Introduction to Media
FRENCH 265	The Problem of Evil in Literature, Film, and Philosophy
HISTORY 151	The American West
HISTORY 204D	Advanced Topics in Agnotology
HISTORY 235D	When Worlds Collide: The Trial of Galileo
INTLPOL 221	Politics of Data: Algorithmic Culture, Big Data, and Information Waste
MS&E 180	Organizations: Theory and Management
OSPFLOR 16	Silicon Valley: The Modern Day Rebirth of Renaissance Florence

OSPFLOR 48	Sharing Beauty in Florence: Collectors, Collections and the Shaping of the Western Museum Tradition
OSPFLOR 49	On-Screen Battles: Filmic Portrayals of Fascism and World War II
OSPFLOR 67	The Celluloid Gaze: Gender, Identity and Sexuality in Cinema
OSPOXFRD 63	Digital Technology in the UK
OSPPARIS 30	The Avant Garde in France through Literature, Art, and Theater
PSYCH 30	Introduction to Perception
PSYCH 75	Introduction to Cultural Psychology
RELIGST 3	The Religious Life of Things
SOC 180A	Foundations of Social Research
STS 51A	Race in Science
STS 51B	Race in Technology
STS 51C	Race in Medicine
STS 123	Making of a Nuclear World: History, Politics, and Culture
STS 151	The Future of Information
STS 166	Knowledge and Information Infrastructures
STS 177	The Cultural Politics of Food and Eating: Technology, History, and Justice
STS 181	Techno-metabolism: Technology, Society, and the Anthropocene
STS 191	Doing STS: Introduction to Research
STS 191W	Doing STS: Introduction to Research
SYMSYS 1	Minds and Machines
SYMSYS 245	Cognition in Interaction Design
TAPS 253T	Virtual Realities: Art, Technology, Performance

Technical Courses

ARTSTUDI 130	Interactive Art: Making it with Arduino
ARTSTUDI 160	Intro to Digital / Physical Design
ARTSTUDI 168	Data as Material
ARTSTUDI 176	Time Shifts
ARTSTUDI 177	Video Art
ARTSTUDI 179	Digital Art I
ARTSTUDI 275	Photography II: Digital
CEE 112A	Industry Applications of Virtual Design & Construction
CME 108	Introduction to Scientific Computing
COMM 176	Advanced Digital Media Journalism
CS 103	Mathematical Foundations of Computing
CS 105	Introduction to Computers
CS 106A	Programming Methodology
CS 106B	Programming Abstractions
CS 106E	Exploration of Computing
CS 106X	Programming Abstractions
CS 107	Computer Organization and Systems
CS 108	Object-Oriented Systems Design
CS 109	Introduction to Probability for Computer Scientists
CS 110	Principles of Computer Systems
CS 147	Introduction to Human-Computer Interaction Design
CS 206	Exploring Computational Journalism
CS 224W	Machine Learning with Graphs
CSRE 230	Law, Order, & Algorithms

ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists
EE 101A	Circuits I
EE 101B	Circuits II
EE 102A	Signal Processing and Linear Systems I
EE 102B	Signal Processing and Linear Systems II
EE 108	Digital System Design
EE 168	Introduction to Digital Image Processing
EE 169	Introduction to Bioimaging
EE 180	Digital Systems Architecture
ENGLISH 184E	Literary Text Mining
ENGR 150	Data Challenge Lab
ME 125	Visual Frontiers
MS&E 111	Introduction to Optimization
MS&E 120	Introduction to Probability
MS&E 130	Information Networks and Services
MS&E 135	Networks
MUSIC 220A	Fundamentals of Computer-Generated Sound
MUSIC 220B	Compositional Algorithms, Psychoacoustics, and Computational Music
MUSIC 254	Computational Music Analysis
MUSIC 257	Neuroplasticity and Musical Gaming
OSPCPTWN 67	ICT4D: An Introduction to the Use of ICTs for Development
OSPOXFRD 62	Digital Technology in the UK
POLISCI 150A	Data Science for Politics
SOC 180B	Introduction to Data Analysis
STATS 60	Introduction to Statistical Methods: Precalculus
STATS 101	Data Science 101
STATS 191	Introduction to Applied Statistics

Innovation and Organization

Thematic concentration in Innovation and Organization:

Units

Socio-Cultural Courses

AMSTUD 96	Signal to Noise: The Sounds of American Culture
AMSTUD 133	Technology and American Visual Culture
ANTHRO 41	Genes and Identity
ANTHRO 132C	Technology and Inequality
ANTHRO 154	Anthropology of Drugs: Experience, Capitalism, Modernity
ARTHIST 147	Modernism and Modernity
ARTSTUDI 174B	Creativity in the Age of Facebook: Making Art for and from Networks
ARTSTUDI 236	Future Media, Media Archaeologies
BIO 182	Modeling Cultural Evolution
BIOE 177	Inventing the Future
CEE 32B	Design Theory
CLASSICS 151	Ten Things: An Archaeology of Design
CLASSICS 156	Design of Cities
COMM 124	Truth, Trust, and Tech
COMM 154	The Politics of Algorithms
CS 181	Computers, Ethics, and Public Policy

CS 182	Ethics, Public Policy, and Technological Change
ECON 118	Development Economics
ECON 145	Labor Economics
EDUC 120	Sociology of Science
EDUC 320	Sociology of Science
ENGLISH 184C	Data and Knowledge in the Humanities
ENGR 145	Technology Entrepreneurship
FEMGEN 44Q	Gendered Innovations in Science, Medicine, Engineering, and Environment
HISTORY 44Q	Gendered Innovations in Science, Medicine, Engineering, and Environment
HISTORY 140	World History of Science
HISTORY 140A	The Scientific Revolution
HISTORY 144	Sex, Gender, and Intersectional Analysis in Science, Medicine, Engineering, and Environment
HISTORY 151	The American West
HISTORY 203C	History of Ignorance
HISTORY 235D	When Worlds Collide: The Trial of Galileo
INTLPOL 221	Politics of Data: Algorithmic Culture, Big Data, and Information Waste
ME 120	History and Ethics of Design
ME 177	Global Engineers' Education
ME 267	Ethics and Equity in Transportation Systems
ME 297	Forecasting for Innovators: Exponential Technologies, Tools and Social Transformation
MS&E 175	Innovation, Creativity, and Change
MS&E 180	Organizations: Theory and Management
MS&E 185	Global Work
MS&E 256	Technology Assessment and Regulation of Medical Devices
OSPBER 126X	A People's Union? Money, Markets, and Identity in the EU
OSPCPTWN 36	The Archaeology of Southern African Hunter Gatherers
OSPFLOR 13	Galileo, Leonardo da Vinci, and the Scientific Revolution in Italy
OSPFLOR 16	Silicon Valley: The Modern Day Rebirth of Renaissance Florence
OSPFLOR 48	Sharing Beauty in Florence: Collectors, Collections and the Shaping of the Western Museum Tradition
OSPFLOR 58	Space as History: Social Vision and Urban Change
OSPFLOR 96	Leonardo!
OSPFLOR 115Y	Building the Cathedral and the Town Hall: Constructing and Deconstructing Symbols of a Civilization
OSPHONGK 24	Urban China
OSPHONGK 28	An Introduction to the Development of Science and Technology in China
OSPOXFRD 63	Digital Technology in the UK
OSPPARIS 30	The Avant Garde in France through Literature, Art, and Theater
OSPPARIS 44	EAP. Analytical Drawing and Graphic Art
OSPPARIS 72	The Ceilings of Paris
OSPPARIS 92	Building Paris: Its History, Architecture, and Urban Design
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America
OSPSANTG 71	Santiago: Urban Planning, Public Policy, and the Built Environment
OSPSANTG 119X	The Chilean Economy: History, International Relations, and Development Strategies
PUBLPOL 134	Ethics on the Edge: Business, Non-Profit Organizations, Government, and Individuals
PUBLPOL 353A	Science and Technology Policy
RELIGST 3	The Religious Life of Things
SOC 114	Economic Sociology
SOC 160	Formal Organizations
SOC 162	The Social Regulation of Markets
SOC 168	Global Organizations: The Matrix of Change
SOC 180A	Foundations of Social Research
STS 51A	Race in Science
STS 51B	Race in Technology
STS 51C	Race in Medicine
STS 123	Making of a Nuclear World: History, Politics, and Culture
STS 151	The Future of Information
STS 166	Knowledge and Information Infrastructures
STS 177	The Cultural Politics of Food and Eating: Technology, History, and Justice
STS 181	Techno-metabolism: Technology, Society, and the Anthropocene
STS 190	Environment and Society
STS 191	Doing STS: Introduction to Research
STS 191W	Doing STS: Introduction to Research
SYMSYS 1	Minds and Machines
SYMSYS 245	Cognition in Interaction Design
TAPS 253T	Virtual Realities: Art, Technology, Performance
Technical Courses	
ARTSTUDI 130	Interactive Art: Making it with Arduino
ARTSTUDI 148P	The Hybrid Print
ARTSTUDI 160	Intro to Digital / Physical Design
ARTSTUDI 168	Data as Material
CS 105	Introduction to Computers
CS 106A	Programming Methodology
CS 106B	Programming Abstractions
CS 106X	Programming Abstractions
CS 107	Computer Organization and Systems
CS 108	Object-Oriented Systems Design
CS 109	Introduction to Probability for Computer Scientists
CS 110	Principles of Computer Systems
CS 147	Introduction to Human-Computer Interaction Design
CS 223A	Introduction to Robotics
CS 224W	Machine Learning with Graphs
CS 225A	Experimental Robotics
CS 347	Human-Computer Interaction: Foundations and Frontiers
CS 402L	Beyond Bits and Atoms - Lab
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists

EE 101A	Circuits I
EE 101B	Circuits II
EE 102A	Signal Processing and Linear Systems I
EE 102B	Signal Processing and Linear Systems II
EE 108	Digital System Design
EE 169	Introduction to Bioimaging
EE 180	Digital Systems Architecture
ENGR 14	Intro to Solid Mechanics
ENGR 40M	An Intro to Making: What is EE
ENGR 60	Engineering Economics and Sustainability
ME 80	Mechanics of Materials
ME 101	Visual Thinking
ME 102	Foundations of Product Realization
ME 115A	Introduction to Human Values in Design
ME 115B	Product Design Methods
ME 203	Design and Manufacturing
ME 216A	Advanced Product Design: Needfinding
MS&E 52	Introduction to Decision Making
MS&E 111	Introduction to Optimization
MS&E 120	Introduction to Probability
MS&E 121	Introduction to Stochastic Modeling
MS&E 130	Information Networks and Services
MS&E 135	Networks
MS&E 152	Introduction to Decision Analysis
MS&E 184	Future of Work: Issues in Organizational Learning and Design
MUSIC 220A	Fundamentals of Computer-Generated Sound
MUSIC 220B	Compositional Algorithms, Psychoacoustics, and Computational Music
MUSIC 257	Neuroplasticity and Musical Gaming
OSPCPTWN 67	ICT4D: An Introduction to the Use of ICTs for Development
OSPOXFRD 62	Digital Technology in the UK
SOC 180B	Introduction to Data Analysis
STATS 60	Introduction to Statistical Methods: Precalculus
STATS 101	Data Science 101
STATS 110	Statistical Methods in Engineering and the Physical Sciences
STATS 116	Theory of Probability
STATS 191	Introduction to Applied Statistics

Life Sciences and Health

Thematic concentration in Life Sciences and Health:

		Units
Social-Cultural Courses		
AFRICAAM 132	Social Class, Race, Ethnicity, and Health	
AMSTUD 41Q	Madwomen and Madmen: Gender and the History of Mental Illness in the U.S.	
AMSTUD 130A	In Sickness and In Health: Medicine and Society in the United States: 1800-Present	
AMSTUD 156H	Women and Medicine in US History: Women as Patients, Healers and Doctors	
ANTHRO 41	Genes and Identity	
ANTHRO 82	Medical Anthropology	
ANTHRO 132C	Technology and Inequality	

ANTHRO 138	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise
ANTHRO 139C	Anthropology of Global Health
ANTHRO 154	Anthropology of Drugs: Experience, Capitalism, Modernity
ANTHRO 186	Culture and Madness: Anthropological and Psychiatric Approaches to Mental Illness
ARTSTUDI 284	Art and Biology
BIOE 131	Ethics in Bioengineering
COMM 186W	Media, Technology, and the Body
EARTHSYS 112	Human Society and Environmental Change
EDUC 120	Sociology of Science
EDUC 340	Psychology and American Indian/Alaska Native Mental Health
FRENCH 219	The Renaissance Body in French Literature and Medicine
GENE 104Q	Law and the Biosciences
HISTORY 44Q	Gendered Innovations in Science, Medicine, Engineering, and Environment
HISTORY 140	World History of Science
HISTORY 144	Sex, Gender, and Intersectional Analysis in Science, Medicine, Engineering, and Environment
HISTORY 203C	History of Ignorance
HISTORY 243C	People, Plants, and Medicine: Colonial Science and Medicine
HISTORY 243G	Tobacco and Health in World History
HUMBIO 2B	Culture, Evolution, and Society
HUMBIO 3B	Environmental and Health Policy Analysis
HUMBIO 4B	Behavior, Health, and Development
HUMBIO 122S	Social Class, Race, Ethnicity, and Health
HUMBIO 166	Food and Society: Exploring Eating Behaviors in Social, Environmental, and Policy Context
HUMBIO 174	Foundations of Bioethics
MED 157	Foundations for Community Health Engagement
MED 224	Social Entrepreneurship and Innovation Lab (SE Lab) - Human & Planetary Health
MS&E 256	Technology Assessment and Regulation of Medical Devices
OSPFLOR 70	The Value of Life: Philosophical Foundations
OSPFLOR 96	Leonardo!
OSPHONGK 28	An Introduction to the Development of Science and Technology in China
OSPMADRD 57	Health Care: A Contrastive Analysis between Spain and the U.S.
OSPMADRD 72	Issues in Bioethics Across Cultures
PHIL 60	Introduction to Philosophy of Science
PHIL 167A	Philosophy of Biology
PSYCH 30	Introduction to Perception
PSYCH 75	Introduction to Cultural Psychology
PUBLPOL 122	BioSecurity and Pandemic Resilience
SOC 152	The Social Determinants of Health
SOC 180A	Foundations of Social Research
STS 51A	Race in Science
STS 51B	Race in Technology
STS 51C	Race in Medicine

STS 123	Making of a Nuclear World: History, Politics, and Culture
STS 177	The Cultural Politics of Food and Eating: Technology, History, and Justice
STS 181	Techno-metabolism: Technology, Society, and the Anthropocene
STS 190	Environment and Society
STS 191	Doing STS: Introduction to Research
STS 191W	Doing STS: Introduction to Research

Technical Courses

ANTHRO 113	Culture and Epigenetics: Towards A Non-Darwinian Synthesis
ANTHRO 116	Data Analysis for Quantitative Research
BIO 45	Introduction to Laboratory Research in Cell and Molecular Biology
BIO 46	Introduction to Research in Ecology and Evolutionary Biology
BIO 47	Introduction to Research in Ecology and Evolutionary Biology
BIO 82	Genetics
BIO 109A	Building Blocks for Chronic Disease
BIO 109B	Advances in Therapeutic Development: Neuronal Signaling and Immunology
BIO 144	Conservation Biology: A Latin American Perspective
BIO 150	Human Behavioral Biology
BIOE 44	Fundamentals for Engineering Biology Lab
BIOE 80	Introduction to Bioengineering (Engineering Living Matter)
BIOE 101	Systems Biology
BIOE 103	Systems Physiology and Design
CHEM 31A	Chemical Principles I
CHEM 31B	Chemical Principles II
CHEM 33	Structure and Reactivity of Organic Molecules
CHEM 171	Foundations of Physical Chemistry
COMPMED 87Q	Laboratory Mouse in Biomedical Research
EE 102A	Signal Processing and Linear Systems I
EE 102B	Signal Processing and Linear Systems II
EE 169	Introduction to Bioimaging
EE 372	Data Science for High Throughput Sequencing
ENGR 150	Data Challenge Lab
HUMBIO 2A	Genetics, Evolution, and Ecology
HUMBIO 3A	Cell and Developmental Biology
HUMBIO 4A	The Human Organism
HUMBIO 51	Big Data for Biologists - Decoding Genomic Function
HUMBIO 89	Introduction to Health Sciences Statistics
OSPAUSTL 10	Coral Reef Ecosystems
OSPAUSTL 28	Terrestrial Ecology and Conservation
OSPAUSTL 32	Coastal Ecosystems
OSPPARIS 76	From Art to Medicine: The Human Body and Tissue Regeneration
OSPSANTG 85	Marine Ecology of Chile and the South Pacific
PHYSICS 21	Mechanics, Fluids, and Heat
PHYSICS 23	Electricity, Magnetism, and Optics
SOC 180B	Introduction to Data Analysis

STATS 60	Introduction to Statistical Methods: Precalculus
STATS 101	Data Science 101
STATS 141	Biostatistics
STATS 191	Introduction to Applied Statistics

Politics and Policy

Thematic concentration in Politics and Policy:

	Units

Socio-Cultural Courses

AMSTUD 133	Technology and American Visual Culture
ANTHRO 132C	Technology and Inequality
ANTHRO 138	Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise
ANTHRO 139C	Anthropology of Global Health
ANTHRO 166	Political Ecology of Tropical Land Use: Conservation, Natural Resource Extraction, and Agribusiness
BIOE 122	BioSecurity and Pandemic Resilience
COMM 137W	The Dialogue of Democracy
COMM 154	The Politics of Algorithms
COMM 230A	Digital Civil Society
CS 181	Computers, Ethics, and Public Policy
CS 182	Ethics, Public Policy, and Technological Change
EARTHSYS 61Q	Food and security
EARTHSYS 160	Sustainable Cities
ECON 106	World Food Economy
EDUC 120	Sociology of Science
EDUC 320	Sociology of Science
ENGLISH 184C	Data and Knowledge in the Humanities
ESS 112	Human Society and Environmental Change
FRENCH 265	The Problem of Evil in Literature, Film, and Philosophy
GERMAN 132	History and Politics of the Future in Germany, 1900-Present
HISTORY 102	History of the International System since 1914
HISTORY 103F	The Changing Face of War: Introduction to Military History
HISTORY 140	World History of Science
HISTORY 151	The American West
HISTORY 203C	History of Ignorance
HISTORY 204D	Advanced Topics in Agnotology
HISTORY 235D	When Worlds Collide: The Trial of Galileo
HISTORY 261G	Presidents and Foreign Policy in Modern History
INTLPOL 221	Politics of Data: Algorithmic Culture, Big Data, and Information Waste
INTLPOL 257	Technology & Public Purpose: Practical Solutions for Innovation's Public Dilemmas
INTNLREL 140A	International Law and International Relations
INTNLREL 140C	The U.S., U.N. Peacekeeping, and Humanitarian War
INTNLREL 180A	Transitional Justice, Human Rights, and International Criminal Tribunals

ME 267	Ethics and Equity in Transportation Systems
MS&E 193	Technology and National Security: Past, Present, and Future
OSPFLOR 16	Silicon Valley: The Modern Day Rebirth of Renaissance Florence
OSPFLOR 49	On-Screen Battles: Filmic Portrayals of Fascism and World War II
OSPHONGK 24	Urban China
OSPMADRD 57	Health Care: A Contrastive Analysis between Spain and the U.S.
OSPPARIS 91	The Future of Globalization: Economics, Politics and the Environment
OSPSANTG 71	Santiago: Urban Planning, Public Policy, and the Built Environment
OSPSANTG 119X	The Chilean Economy: History, International Relations, and Development Strategies
POLISCI 102	Introduction to American Politics and Policy: The Good, The Bad, and The Ugly
POLISCI 110G	Governing the Global Economy
POLISCI 110Y	War and Peace in American Foreign Policy
POLISCI 114D	Democracy, Development, and the Rule of Law
POLISCI 114S	International Security in a Changing World
POLISCI 122	Introduction to American Law
POLISCI 124L	The Psychology of Communication About Politics in America
POLISCI 214R	Challenges and Dilemmas in American Foreign Policy
POLISCI 233F	Science, technology and society and the humanities in the face of the looming disaster
PUBLPOL 122	BioSecurity and Pandemic Resilience
PUBLPOL 353A	Science and Technology Policy
SOC 180A	Foundations of Social Research
STS 51A	Race in Science
STS 51B	Race in Technology
STS 51C	Race in Medicine
STS 123	Making of a Nuclear World: History, Politics, and Culture
STS 151	The Future of Information
STS 166	Knowledge and Information Infrastructures
STS 177	The Cultural Politics of Food and Eating: Technology, History, and Justice
STS 181	Techno-metabolism: Technology, Society, and the Anthropocene
STS 190	Environment and Society
STS 191	Doing STS: Introduction to Research
STS 191W	Doing STS: Introduction to Research

Technical Courses

CEE 70	Environmental Science and Technology
CHEM 31A	Chemical Principles I
CHEM 31B	Chemical Principles II
CHEM 33	Structure and Reactivity of Organic Molecules
CS 105	Introduction to Computers
CS 106A	Programming Methodology
CS 106B	Programming Abstractions
CS 106X	Programming Abstractions
CS 107	Computer Organization and Systems
CS 108	Object-Oriented Systems Design
CS 109	Introduction to Probability for Computer Scientists
CS 110	Principles of Computer Systems
CSRE 230	Law, Order, & Algorithms
PHYSICS 41	Mechanics
PHYSICS 43	Electricity and Magnetism
PHYSICS 240	Introduction to the Physics of Energy
PHYSICS 241	Introduction to Nuclear Energy
POLISCI 150B	Machine Learning for Social Scientists
POLISCI 150C	Causal Inference for Social Science
SOC 180B	Introduction to Data Analysis
STATS 60	Introduction to Statistical Methods: Precalculus
STATS 101	Data Science 101
STATS 191	Introduction to Applied Statistics

Social Dynamics of Data and Information

Thematic concentration in Social Dynamics of Data and Information:

Units

Socio-Cultural Courses

AMSTUD 96	Signal to Noise: The Sounds of American Culture
AMSTUD 133	Technology and American Visual Culture
ANTHRO 132C	Technology and Inequality
ARTSTUDI 236	Future Media, Media Archaeologies
CEE 32S	The Situated Workplace and Public Life
CEE 118X	Shaping the Future of the Bay Area
CEE 118Y	Shaping the Future of the Bay Area
CEE 118Z	Shaping the Future of the Bay Area
COMM 102S	Technology and Inequality
COMM 120W	The Rise of Digital Culture
COMM 124	Truth, Trust, and Tech
COMM 154	The Politics of Algorithms
COMM 164	The Psychology of Communication About Politics in America
COMM 166	Virtual People
COMM 172	Media Psychology
COMM 184	Race and Media
COMM 186W	Media, Technology, and the Body
CS 181	Computers, Ethics, and Public Policy
CS 182	Ethics, Public Policy, and Technological Change
CSRE 180S	The Black Music 1980s: Turntables, Beat Machines and DJ Scholarship
EDUC 226	Curating Experience: Representation in and beyond Museums
ENGLISH 184C	Data and Knowledge in the Humanities
FILMSTUD 6	Introduction to Media
HISTORY 203C	History of Ignorance
INTLPOL 221	Politics of Data: Algorithmic Culture, Big Data, and Information Waste
INTLPOL 257	Technology & Public Purpose: Practical Solutions for Innovation's Public Dilemmas
INTLPOL 321	Fundamentals of Cyber Policy and Security
ME 297	Forecasting for Innovators: Exponential Technologies, Tools and Social Transformation

MS&E 185	Global Work
MS&E 256	Technology Assessment and Regulation of Medical Devices
OSPFLOR 16	Silicon Valley: The Modern Day Rebirth of Renaissance Florence
PUBLPOL 134	Ethics on the Edge: Business, Non-Profit Organizations, Government, and Individuals
PUBLPOL 353A	Science and Technology Policy
SOC 114	Economic Sociology
SOC 180A	Foundations of Social Research
STS 51A	Race in Science
STS 51B	Race in Technology
STS 51C	Race in Medicine
STS 151	The Future of Information
STS 166	Knowledge and Information Infrastructures
STS 191W	Doing STS: Introduction to Research
STS 200N	Funkentelechy: Technologies, Social Justice and Black Vernacular Cultures
SYMSYS 1	Minds and Machines
SYMSYS 245	Cognition in Interaction Design
TAPS 253T	Virtual Realities: Art, Technology, Performance

Technical Courses

ARTSTUDI 130	Interactive Art: Making it with Arduino
ARTSTUDI 160	Intro to Digital / Physical Design
ARTSTUDI 168	Data as Material
ARTSTUDI 173E	Cell Phone Photography
ARTSTUDI 174B	Creativity in the Age of Facebook: Making Art for and from Networks
ARTSTUDI 179	Digital Art I
ARTSTUDI 275	Photography II: Digital
CEE 112A	Industry Applications of Virtual Design & Construction
CEE 120A	Building Modeling for Design & Construction
CEE 124	Sustainable Development Studio
CS 103	Mathematical Foundations of Computing
CS 105	Introduction to Computers
CS 106A	Programming Methodology
CS 106B	Programming Abstractions
CS 106E	Exploration of Computing
CS 107	Computer Organization and Systems
CS 108	Object-Oriented Systems Design
CS 109	Introduction to Probability for Computer Scientists
CS 110	Principles of Computer Systems
CS 147	Introduction to Human-Computer Interaction Design
CS 206	Exploring Computational Journalism
CS 223A	Introduction to Robotics
CS 224W	Machine Learning with Graphs
CS 225A	Experimental Robotics
CS 347	Human-Computer Interaction: Foundations and Frontiers
CS 402L	Beyond Bits and Atoms - Lab
CSRE 230	Law, Order, & Algorithms
ECON 102A	Introduction to Statistical Methods (Postcalculus) for Social Scientists
EE 101A	Circuits I

EE 101B	Circuits II
EE 102A	Signal Processing and Linear Systems I
EE 108	Digital System Design
EE 168	Introduction to Digital Image Processing
EE 169	Introduction to Bioimaging
EE 180	Digital Systems Architecture
EE 372	Data Science for High Throughput Sequencing
ENERGY 240	Data science for geoscience
ENGLISH 184E	Literary Text Mining
ENGR 150	Data Challenge Lab
GEOLSCI 6	Data Science for Geoscience
HUMBIO 88	Introduction to Statistics for the Health Sciences
HUMBIO 89	Introduction to Health Sciences Statistics
ME 115A	Introduction to Human Values in Design
ME 125	Visual Frontiers
MS&E 111	Introduction to Optimization
MS&E 130	Information Networks and Services
MS&E 135	Networks
MS&E 184	Future of Work: Issues in Organizational Learning and Design
MS&E 297	"Hacking for Defense": Solving National Security issues with the Lean Launchpad
MUSIC 220A	Fundamentals of Computer-Generated Sound
MUSIC 220B	Compositional Algorithms, Psychoacoustics, and Computational Music
MUSIC 254	Computational Music Analysis
MUSIC 257	Neuroplasticity and Musical Gaming
POLISCI 150A	Data Science for Politics
SOC 180B	Introduction to Data Analysis
STATS 60	Introduction to Statistical Methods: Precalculus
STATS 101	Data Science 101
STATS 191	Introduction to Applied Statistics

Interdisciplinary Honors in Science, Technology, and Society

The Program in Science, Technology, and Society (STS) offers an opportunity for undergraduates to graduate with Interdisciplinary Honors in STS. The STS honors program is open to STS majors as well as students from other majors.

Students accepted into the program carry out an original honors project, working with a faculty adviser. For STS majors, this project also fulfills the requirements for a capstone course and a sociocultural concentration course. An STS honors thesis tackles a significant problem or question related to the intersection of science, technology, and society. Students draw research methods from one or more of the disciplines that shape STS, such as history, sociology, communication, anthropology, environmental science, computer programming/modeling, engineering, economics, political science, and art history, while also capitalizing on unique analytical perspectives of STS as an intellectual field. STS interdisciplinary honors signals expertise in a given area, organizational skills, and intellectual rigor, and students have used it as a springboard for graduate studies and for careers in fields such as information technology, entrepreneurship, finance, public policy, media, education, law,

medicine, and the nonprofit sector. Past honors projects are on file in the STS office library, as well as the digital repository.

Admission

Students are encouraged to apply to the STS honors program during the Spring Quarter of their junior year. Late application is considered up to the add/drop deadline of the Autumn Quarter of their senior year.

For Majors in Science, Technology, and Society

In preparation for applying to the honors program in STS, students should:

1. Select an area of research interest in STS, prepare related research questions, and identify potential faculty advisers for an honors thesis based on those questions.
2. Attend one or more of the quarterly STS workshops offered for prospective honors students, and/or take STS 191W Introduction to Research in STS (offered Winter Quarter) or an alternative course on research methods approved by the STS honors program director, and/or speak with the STS honors program director.
3. Submit a research statement and an honors program application, following the parameters set out at STS Honors Program (https://sts.stanford.edu/major-sts/honors-program/) web site.

For Majors in Other Departments and Programs

In addition to the requirements for STS majors, applicants from other departments should:

1. Meet with the honors program director as early as possible to ensure that they have sufficient background in relevant analytical and methodological approaches.
2. Satisfy one of the following:
   - Complete STS 1 (http://exploredegrees.stanford.edu/search/?P=STS%201), The Public Life of Science and Technology, and either two courses approved as sociocultural foundational courses in STS, or two alternative courses approved by the STS honors program director as relevant to the proposed honors research in STS; or
   - Complete three courses approved by the STS honors program director as relevant to the proposed honors research in STS.

Interdisciplinary Honors Requirements

To graduate with Interdisciplinary Honors in STS, seniors in the honors program need to meet the following criteria:

1. Enroll in STS 299 with an honors faculty adviser to oversee the thesis for a minimum of 10 units total, with up to 5 units per quarter, over Autumn, Winter and Spring quarters. Students who choose to obtain Permit for Services Only (PSO) status during their final quarter may do so with the consent of the STS honors program director but they must still have enrolled in a minimum of 10 units of STS 299 during previous quarters.
2. Enroll in STS 298, a required monthly workshops for current STS honors students.
3. Complete a thesis judged worthy of an honors program by the faculty adviser and STS adviser.
4. Have an overall Stanford GPA of 3.4 at the end of Winter Quarter, senior year, or demonstrated academic competence.

COVID-19 Policies

On July 30, the Academic Senate adopted grading policies effective for all undergraduate and graduate programs, excepting the professional Graduate School of Business, School of Law, and the School of Medicine M.D. Program. For a complete list of those and other academic policies relating to the pandemic, see the "COVID-19 and Academic Continuity (http://exploredegrees.stanford.edu/covid-19-policy-changes/#tempdepttemplatetabtext)" section of this bulletin.

The Senate decided that all undergraduate and graduate courses offered for a letter grade must also offer students the option of taking the course for a "credit" or "no credit" grade and recommended that deans, departments, and programs consider adopting local policies to count courses taken for a "credit" or "satisfactory" grade toward the fulfillment of degree-program requirements and/or alter program requirements as appropriate.

Undergraduate Degree Requirements
Grading

The Program in Science, Technology, and Society counts all courses taken in the academic year 2020-21 with a grade of 'CR' (credit) or 'S' (satisfactory) towards satisfaction of undergraduate degree requirements that otherwise require a letter grade.

STS Affiliated Faculty

Director: Paul N Edwards

Associate Director: Kyoko Sato

Executive Board: Paul N Edwards (STS and CISAC), Paula Findlen (History), Mark Granovetter (Sociology), Stephen Luby (Global Health), Rob Reich (Center for Ethics in Society), Gabrielle Hecht (History), Pamela Hinds (Management Science and Engineering), Michael Lepech (Civil and Environmental Engineering), Scott Sagan (Political Science), Fred Turner (Communication)

Affiliated Faculty and Staff: Jeremy Bailenson (Communication), Adam Banks (Graduate School of Education), Thomas Byers (Management Science and Engineering), Angèle Christin (Communication), Jean-Pierre Dupuy (French), Paul N. Edwards (STS and CISAC), Paula Findlen (History), Duana Fullwiley (Anthropology), Mark Granovetter, (Sociology), Hank Greely (Law), Ann Grimes (Communication), James T. Hamilton (Communication), Gabrielle Hecht (History) Pamela Hinds (Management Science and Engineering), Hector Hoyos (Iberian and Latin American Cultures), Miyako Inoue (Anthropology), Sarah Lochlann Jain (Anthropology), Robert Laughlin (Physics), Pamela Lee (Art and Art History), Michael Lepech (Civil and Environmental Engineering), Helen Longino (Philosophy), Henry Lowood (Stanford University Libraries), Thomas Mullaney (History), Brad Osgood (Electrical Engineering), Walter Powell (Education), Robert Proctor (History), Jessica Riskin (History), Scott Sagan (Political Science), Kyoko Sato (STS), Londa Schiebinger (History), Michael Shanks (Classics, Anthropology), Mitchell Stevens (Education), Fred Turner (Communication), John Willinsky (Education), Xiaochang Li (Communication), Aileen Robinson (Theater & Performance Studies), Daniel McFarland (Education)

Emeriti: James Adams (Management Science and Engineering, Mechanical Engineering), Barton Bernstein (History), Martin Hellman (Electrical Engineering), Robert McGinn (Management Science and Engineering), Eric Roberts (Computer Science), Walter Vincenti (Aeronautics and Astronautics), Gavin Wright (American Economic History)

Overseas Studies Courses in Science, Technology, and Society

The Bing Overseas Studies Program (http://bosp.stanford.edu) (BOSP) manages Stanford international and domestic study away programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The BOSP course search site (https://undergrad.stanford.edu/programs/bosp/explore/search-courses/) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (http://explorecourses.stanford.edu) or Bing Overseas Studies (http://bosp.stanford.edu).

Due to COVID-19, all BOSP programs have been suspended for Autumn Quarter 2020-21. All courses and quarters of operation are subject to change.

		Units
OSPAUSTL 10	Coral Reef Ecosystems	3
OSPBER 126X	A People's Union? Money, Markets, and Identity in the EU	4-5
OSPCPTWN 36	The Archaeology of Southern African Hunter Gatherers	4
OSPCPTWN 67	ICT4D: An Introduction to the Use of ICTs for Development	3
OSPFLOR 13	Galileo, Leonardo da Vinci, and the Scientific Revolution in Italy	3
OSPFLOR 41	The Florentine Sketchbook: A Visual Arts Practicum	4
OSPFLOR 48	Sharing Beauty in Florence: Collectors, Collections and the Shaping of the Western Museum Tradition	4
OSPFLOR 49	On-Screen Battles: Filmic Portrayals of Fascism and World War II	5
OSPFLOR 58	Space as History: Social Vision and Urban Change	4
OSPFLOR 67	The Celluloid Gaze: Gender, Identity and Sexuality in Cinema	4
OSPFLOR 96	Leonardo!	3
OSPFLOR 115Y	Building the Cathedral and the Town Hall: Constructing and Deconstructing Symbols of a Civilization	4
OSPHONGK 24	Urban China	4
OSPHONGK 28	An Introduction to the Development of Science and Technology in China	4
OSPMADRD 27	Canarian Night Skies	4
OSPMADRD 45	Women in Art: Case Study in the Madrid Museums	4
OSPMADRD 57	Health Care: A Contrastive Analysis between Spain and the U.S.	4
OSPMADRD 72	Issues in Bioethics Across Cultures	4
OSPOXFRD 62	Digital Technology in the UK	4-5
OSPOXFRD 63	Digital Technology in the UK	3-4
OSPPARIS 30	The Avant Garde in France through Literature, Art, and Theater	4
OSPPARIS 44	EAP. Analytical Drawing and Graphic Art	2
OSPPARIS 72	The Ceilings of Paris	4
OSPPARIS 76	From Art to Medicine: The Human Body and Tissue Regeneration	3
OSPPARIS 80	The Body, Race, and Difference in Contemporary France	5
OSPPARIS 91	The Future of Globalization: Economics, Politics and the Environment	5
OSPPARIS 92	Building Paris: Its History, Architecture, and Urban Design	4
OSPSANTG 29	Sustainable Cities: Comparative Transportation Systems in Latin America	5
OSPSANTG 71	Santiago: Urban Planning, Public Policy, and the Built Environment	5
OSPSANTG 85	Marine Ecology of Chile and the South Pacific	5
OSPSANTG 119X	The Chilean Economy: History, International Relations, and Development Strategies	5

Courses

STS 1. The Public Life of Science and Technology. 4 Units.
The course focuses on key social, cultural, and values issues raised by contemporary scientific and technological developments. The STS interdisciplinary lens helps students develop and apply skills in three areas: (a) Historical analysis of contemporary global affairs (e.g., spread of technologies; responses to climate change); (b) Bioethical reasoning around health issues (e.g., disease management; privacy rights); and (c) The sociological study of knowledge (e.g., intellectual property, science publishing). A discussion section is required. Discussion sections meet once per week immediately after lecture. International time zone students are encouraged to fill out the following Google Form: https://tinyurl.com/STS1-Timezone.
Same as: CSRE 1T

STS 51A. Race in Science. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Fall quarter focuses on science. What is the science of race and racism? How does race affect scientific work? Weekly guest speakers will address such issues as the psychology and anthropology of race and racism; how race, language, and culture affect education; race in environmental science and environmental justice; the science of reducing police violence; and the role of race in genomic research. Talks will take a variety of forms, from panel discussions to interviews and lectures. Weekly assignments: read a related article and participate in an online discussion.
Same as: AFRICAAM 51A, CEE 151A, COMM 51A, CSRE 51A, HUMBIO 71A

STS 51B. Race in Technology. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Winter quarter focuses on technology. How do race and racism affect the design and social impact of technology, broadly defined? Can new or different technology help to reduce racial bias? Invited speakers will address the role of race in such issues as energy infrastructure, nuclear arms control, algorithmic accountability, machine learning, artificial intelligence, and synthetic biology. Talks will take a variety of forms, ranging from panel discussions to interviews and lectures. Weekly assignments: read a related article and participate in an online discussion.
Same as: AFRICAAM 51B, BIOE 91B, CEE 151B, COMM 51B, CSRE 51B, HUMBIO 71B

STS 51C. Race in Medicine. 1 Unit.
What are the roles of race and racism in science, technology, and medicine? 3-course sequence; each quarter can be taken independently. Spring quarter focuses on medicine. How do race and racism affect medical research and medical care? What accounts for health disparities among racial groups? What are the history, ethics, legal, and social issues surrounding racialized medical experiments and treatments? Invited speakers will address these and other issues. Talks will take a variety of forms: conversations, interviews, panels, and others. Weekly assignments: read a related article and participate in an online discussion.
Same as: AFRICAAM 51C, BIOE 91C, CEE 151C, CSRE 51C, HUMBIO 71C

STS 123. Making of a Nuclear World: History, Politics, and Culture. 4 Units.
Nuclear technology has shaped our world through its various applications (e.g., weapons, energy production, medicine) and accidents and disasters (e.g., Chernobyl, Three Mile Island, Fukushima). This course will examine the development of nuclear technology and its consequences to politics and culture at the global, national, regional and local levels from interdisciplinary perspectives. Some of the key questions addressed are: How did different countries and communities experience and respond to the 1945 bombings of Hiroshima and Nagasaki? How did such experiences affect the later development of the technology in different national contexts? How have nuclear tests and disasters change the ways in which risks are understood and managed globally and locally? What kinds of political activism, international arrangements, and cultural tropes and imageries emerged in response to nuclear technology? We explore these questions through key works and recent studies in history, anthropology, sociology, and science and technology studies, as well as through films and literature.

STS 151. The Future of Information. 4 Units.
As information has a fascinating history (see HISTORY 5A), so it possesses a promising if concerning future. Through lecture, demonstration, online modules, and in-class web-work, this course will provide students with advanced strategies in (a) identifying sources and tools for advancing the quest for information; (b) assessing elements of trust, authority, and chicanery in the provision of information; (c) recognizing the economic and legal structures shaping information sources, services, and rights; and (d) discovering who is behind what information. With a focus on the info-worlds of journalism, learning, governance, students will acquire and practice the forensic skills and web savvy of fact-checkers and investigative reporters, activists and scholars. Here's a class set to determine the future course of information. The class will be a hybrid course, combining in-class delivery of materials, with a number of classes involving students taking online modules (at their convenience) that are designed to teach information literacy skills. Same as: EDUC 151

STS 166. Knowledge and Information Infrastructures. 3-4 Units.
This course introduces historical, theoretical, and comparative perspectives on knowledge and information systems from the medieval world to the present. Cases include libraries, meteorology, climate science, the Internet, the World Wide Web, and social science data systems. It theorizes how infrastructures form, how they change, and how they shape (and are shaped by) social systems. The course ends with challenges to modern knowledge infrastructures, such as crowdsourcing, citizen science, and alternative and bogus knowledge. Same as: HISTORY 242D

STS 177. The Cultural Politics of Food and Eating: Technology, History, and Justice. 4-5 Units.
This course will examine our everyday food practices as a site of politics where culture, technology, history, and issues of ethics and justice intersect. Through a survey of academic, journalistic, and artistic works on food and eating, the course will explore a set of key analytical frameworks and conceptual tools in STS, such as the politics of technology, classification and identity, the reproduction of inequality, and nature/culture boundaries. The topics covered include: the industrialization of agriculture; globalization and local foodways; food justice and ethics; new technologies in food practices (e.g., biotechnology, delivery apps); health and diet trends; and food and global challenges (e.g., climate change, COVID-19). Through food as a window, the course intends to achieve two broad intellectual goals. First, students will explore various theoretical and methodological approaches in STS and related fields (e.g., anthropology, history, sociology). Second, student will develop a set of basic skills and tools for their own critical thinking and empirical research, and design and conduct independent research on a topic related to food.

STS 181. Techno-metabolism: Technology, Society, and the Anthropocene. 3-4 Units.
In the Anthropocene epoch, humanity has become a geological force. As the sum of all technological systems and their human components, the technosphere metabolizes energy, materials, and information. Techno-metabolism's waste products- greenhouse gases, microplastics, nuclear waste, etc. - are transforming the biosphere and the geosphere, with radically different effects on disparate peoples and places. Scientists, historians, and others have proposed new ways to conceptualize techno-metabolism in order to reduce energy requirements and material waste. Meanwhile, "data exhaust" - the "waste" data generated by individual activity, from web searches to Facebook and Instagram - is increasingly "recycled" to detect patterns, trends, and individual preferences. In this project-centered course, students will seek creative ways to visualize, understand, and change the interplay of energy, materials, information, and waste. Assignments include reading logs and a term-long group project.

STS 190. Environment and Society. 4 Units.
Humans have long shaped and reshaped the natural world with science and technology. Once a menacing presence to conquer or an infinite reserve for resources, nature is now understood to require constant protection from damage and loss. Global challenges such as climate change have been further forcing us to reconsider our fundamental ideas not only about nature, but also about ethics and justice. This course will examine humanity's varied relationships with the environment, with a focus on the role of science and technology. Topics include: industrialization and modernism, diversity in environmentalism, environmental justice and inequalities, climate politics, global-local tensions, nuclear technology, the Anthropocene debate, and COVID-19 and the environment. Students will explore theoretical and methodological approaches in STS and related fields in social sciences, and conduct original research that engages with environmental issues of their choice. Enrollment limited to juniors and seniors, or with consent of instructor.

STS 191. Doing STS: Introduction to Research. 4 Units.
This seminar introduces key analytical approaches and methodologies in STS, as well as basic tools for designing and conducting original research in STS. Students survey a series of influential studies in STS; identify productive questions of their own interest; and explore how to pursue them through strong research design. By completing smaller writing assignments throughout the quarter, you will produce a fully developed research proposal as final assignment. This final proposal can serve as an honors prospectus for students who seek to participate in the STS honors program. First week attendance mandatory.

STS 191W. Doing STS: Introduction to Research. 4 Units.
This seminar introduces key analytical approaches and methodologies in STS, as well as basic tools for designing and conducting original research in STS. Students survey a series of influential studies in STS; identify productive questions of their own interest; and explore how to pursue them through strong research design. By completing smaller writing assignments throughout the quarter, you will produce a fully developed research proposal as final assignment. This final proposal can serve as an honors prospectus for students who seek to participate in the STS honors program. First week attendance mandatory.

STS 198. Independent Research. 1-5 Unit.
Independent research. Student develops own project with supervision by an STS faculty affiliate. Students must email Prof. Edwards with brief project description and name of faculty supervisor. May be repeated for credit.

STS 199. Independent Study. 1-5 Unit.
Every unit of credit is understood to represent three hours of work per week per term and is to be agreed upon between the student and the faculty member. Instructor consent required. Please contact the department for a permission number.

STS 199A. Curricular Practical Training. 1 Unit.
Students obtain internship in a relevant research or industrial activity to enhance their professional experience consistent with their degree program and area of concentration. Prior to enrolling students must get internship approved by the STS Program Director. At the end of the quarter, a one-page final report must be supplied documenting work done and relevance to degree program. Meets the requirements for Curricular Practical Training for students on F-1 visas. Student is responsible for arranging own internship. Limited to declared STS majors only. Course may be repeated twice. Instructor consent required. Please contact the department for a permission number.

STS 199J. Editing a Science Technology and Society Journal. 1-2 Unit.
The Science Technology and Society (STS) Program has a student journal, Intersect, that has been publishing STS student papers for a number of years. This course involves learning about how to serve as an editor of a peer-reviewed journal, while serving as one of the listed editors of Intersect. Entirely operated online, the journal uses a work-flow management to help with the submission process, peer-review, editing, and publication. Student editors learn by being involved in the publishing process, from soliciting manuscripts to publishing the journal's annual issue, while working in consultation with the instructor. Students will also learn about current practices and institutional frameworks around open access and digital publishing.

STS 200A. Food and Society: Politics, Culture and Technology. 5 Units.
This course will examine how politics, culture, and technology intersect in our food practices. Through a survey of academic, journalistic, and artistic works on food and eating, the course will explore a set of key analytical frameworks and conceptual tools in STS, such as the politics of technology, classification and identity, and nature/culture boundaries. The topics covered include: the industrialization of agriculture; technology and the modes of eating (e.g., the rise of restaurants); food taboos; globalization and local foodways; food and environmentalism; and new technologies in production (e.g., genetically modified food). Through food as a window, the course intends to achieve two broad intellectual goals. First, students will explore various theoretical and methodological approaches in STS. In particular, they will pay particular attention to the ways in which politics, culture, and technology intersect in food practices. Second, student will develop a set of basic skills and tools for their own critical thinking and empirical research, and design and conduct independent research on a topic related to food. First class attendance mandatory. STS majors must have Senior status to enroll in this Senior Capstone course.

STS 200F. Sociology of Innovation and Invention. 5 Units.
This course examines the social, cultural, and economic factors that foster novelty. We will study a wide array of historical contexts, from the Renaissance to the present day, in which clusters of related innovations transformed the way things are done. We ask when do such innovations cascade out and produce social inventions that, for good and bad, create profound changes in how things are done, leading to new forms of organizations and new categories of people. Seminar/lecture format, reading intensive, final term paper. Prerequisite: admission to the course is restricted to declared STS seniors and is by application only. Email Emily Van Poetsch (emilyvp@stanford.edu) for an application. Applications must be submitted by 5pm on November 1st.

STS 200L. Critique of Technology. 3-5 Units.
Informed citizens living in today's world, and especially in Silicon Valley, should be able to formulate their own articulate positions about the role of technology in culture. The course gives students the tools to do so. Against the trend towards the thoughtless celebration of all things technological, we will engage in critique in the two senses of the term: as careful study of the cultural implications of technology and as balanced, argumentative criticism. Can technology make life more meaningful, society more fair, people smarter, and the world smaller? We will pay special attention to the insights that literature, and other arts, can offer for reframing digital culture. Selections by Latin American fiction writers (Cortázar, Zambra), philosophers and thinkers (Heidegger and Beller), as well as recent popular works of social commentary, such as You are not a Gadget, The Shallows, 24/7, and Present Shock. Taught in English.

STS 200M. Tobacco and Health in World History. 4-5 Units.
Cigarettes are the world's leading cause of death--but how did we come into this world, where 6 trillion cigarettes are smoked every year? Here we explore the political, cultural, and technological origins of the cigarette and cigarette epidemic, using the tobacco industry's 80 million pages of secret documents. Topics include the history of cigarette advertising and cigarette design, the role of the tobacco industry in fomenting climate change denial, and questions raised by the testimony of experts in court.

STS 200N. Funkentelechy: Technologies, Social Justice and Black Vernacular Cultures. 5 Units.
From texts to techne, from artifacts to discourses on science and technology, this course is an examination of how Black people in this society have engaged with the mutually consitutive relationships that endure between humans and technologies. We will focus on these engagements in vernacular cultural spaces, from storytelling traditions to music and move to ways academic and aesthetic movements have imagined these relationships. Finally, we will consider the implications for work with technologies in both school and community contexts for work in the pursuit of social and racial justice.
Same as: AFRICAAM 200N, EDUC 314

STS 200P. Leonardo's World: Science, Technology and Art. 4-5 Units.
Leonardo da Vinci is emblematic of creativity and innovation. His art is iconic, his inventions legendary. His understanding of nature, the human body, and machines made him a scientist and engineer as well as an artist. This class explores the historical Leonardo, exploring his interests and accomplishments as a product of the society of Renaissance Italy. Why did this world produce a Leonardo? Students will contribute to a library exhibit for the 500th anniversary of Leonardo's death in May 2019. This is an STS capstone seminar intended primarily for STS majors.

STS 200Q. Sociology of Science. 3-4 Units.
The sociology of science concerns the social structures and practices by which human beings interpret, use and create intellectual innovations. In particular we will explore the claim that scientific facts are socially constructed and ask whether such a characterization has limits. Course readings will concern the formation and decline of various thought communities, intellectual social movements, scientific disciplines, and broader research paradigms. A special focus will be placed on interdisciplinarity as we explore whether the collision of fields can result in new scientific advances. This course is suitable to advanced undergraduates and doctoral students.
Same as: EDUC 120, EDUC 320, SOC 330

STS 200T. Racial Justice in the Nuclear Age. 5 Units.
This upper-level course explores the history of radioactive contamination in the Bay Area and elsewhere. We'll examine the legacy of atomic bomb testing in our region and the current political implications of that legacy. We'll then explore the colonial and postcolonial dimensions of the nuclear age and the long-term contamination it has produced. Case studies vary yearly; they include uranium mining in Africa, nuclear testing in the Pacific, and accidents at Chernobyl and Fukushima. At least one field trip!
Same as: HISTORY 203F

STS 200U. The Age of Plague: Medicine and Society, 1300-1750. 5 Units.
(Undergraduates, enroll in 234P. Graduates, enroll in 334P) The arrival of plague in Eurasia in 1347-51 affected many late medieval and early modern societies. It transformed their understanding of disease, raised questions about the efficacy of medical knowledge, and inspired new notions of public health. This class explores the history of medicine in the medieval Islamic and European worlds. Changing ideas about the body, the roles of different healers and religion in healing, the growth of hospitals and universities, and the evolution of medical theory and practice will be discussed. How did medicine and society change in the age of plague?.
Same as: HISTORY 234P

STS 298. STS Honors Meeting. 1 Unit.
This is a required monthly meeting for STS Honors students.

STS 299. Advanced Individual Work. 1-5 Unit.
For students in the STS Honors program. Every unit of credit is understood to represent three hours of work per week per term and is to be agreed upon between the student and the faculty member. May be repeated for credit.