THE PROGRAM IN SCIENCE, TECHNOLOGY & SOCIETY (STS) AT STANFORD UNIVERSITY
REQUIREMENTS AND APPROVED COURSES
2015-2016

STS students take a set of Core STS Courses and a set of Socio-Cultural and Technical Courses in a selected Concentration Area. In putting their program together (on a B.A. or B.S. Form), students are advised to review the STS Program Policies on page 2. It is important to note that all degree courses must 1) be taken for a letter grade if offered, and 2) for at least the minimum amount of units listed in the attached course menus - even if the course offers registration for fewer credits. The course’s units and quarter are in parentheses: Autumn (A), Winter (W), Spring (S), Summer (SUM), and NO = not offered in 2015-2016 (but should be following year). Always confirm quarters with ExploreCourses!

I. STS CORE REQUIREMENTS (26+ units; 8 course minimum with C grade minimum, if declared after 8/31/2013)
→ Include at least one Writing in the Major (WIM) course (see ★) and, if declared after 8/31/2014, one STS Global course (see ☑).

A. Gateway Requirement: STS 1: Public Life of Science and Technology (4, W) (strongly recommended prior to declaring)

B. Disciplinary Requirement:

Social Sciences and Humanities Courses (complete 4 courses)
- ANTHRO 41: Genes and Identity (3, W)
- ANTHRO 90C: Theory of Ecological and Environmental Anthropology (5, W) ★
- ANTHRO 126: Urban Culture in Global Perspective (5, A) ☑
- ANTHRO 138: Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise (5, A) ☑
- ANTHRO 186: Culture and Madness (5, NO) ☑
- CLASSICS 151: Ten Things: An Archaeology of Design (3, S)
- COMM 120W: Digital Media in Society (4-5, A) ★
- COMM 142W: Media Economics (4-5, S) ★
- ECON 106: World Food Economy (5, S) ☑
- ENGLISH 184C: Data and Knowledge in the Humanities (5, NO)
- HISTORY 131: Leonardo’s World: Science, Technology and Art, in the Renaissance (5, W) ☑
- HISTORY 140: World History of Science (5, W) ☑
- HISTORY 140A: Scientific Revolution (5, A) ★
  or HISTORY 232F: Scientific Revolution (5, NO) ★
- HISTORY 144: Women and Gender in Science, Medicine and Engineering (5, S) ☑
  or HISTORY 44Q: Gendered Innovations in Science, Medicine, Engineering, and Environment (4-5, S) ☑
- HISTORY 203J: Water in World History (4-5, A) ☑
- HISTORY 208A: Science and Law in History (4-5, NO) ☑
- PHIL 60: Introduction to Philosophy of Science (5, W)
- POLISCI 233F: Science, Technology and Society and the Humanities in the Face of the Looming Disaster (3-5, W) ☑
- RELIGST 31: The Religious Life of Things (3-5, NO)
- SOC 114: Economic Sociology (4, NO)

Engineering and Science Courses (complete 2 courses)
- CEE 64: Air Pollution and Global Warming: History, Science, and Solutions (3, W) ☑
- CEE 146A: Engineering Economy (3, W)
- CS 181W: Computers, Ethics, and Public Policy [Prereq: CS 106B or X] (4, A) ★
- ENGR 131: Ethical Issues in Engineering (4, A/W/S)
- HUMBIO 173: Science, Innovation, and the Law [Prereq: HUMBIO Core or instructor consent] (5, A)
- ME 214: Good Products, Bad Products (3-4, W)
- MS&E 189: Social Networks - Theory, Methods, and Applications (3, W)
- MS&E 193: Technology and National Security (3, A) ★
- MS&E 197: Ethics, Technology, and Public Policy (5, NO) ★

C. Senior Requirement:
- STS 200: Senior Capstone (4 or 5 units, A/W/S)
- STS 299: Honors Program (10+ units, A/W/S) [Equivalent to Capstone and 1 Socio-Cultural Concentration Area course]
II. CONCENTRATION AREA (50+ units; 12 course min.)

Students are encouraged to select courses in both the Core and Concentration Area around an identifiable set of topics and issues in STS, as well as at least one technical set of skills to develop a greater sense of expertise and application for their program. A student’s curriculum plan, initially and with any changes, must be reviewed and approved by the STS Associate Director and Undergraduate Advisor. The goal of that review is to help students maximize the intellectual coherence of their engagement with foundational ideas and approaches in STS, while developing strengths in the social sciences, humanities, science, and engineering. Information about pursuing a self-designed Concentration Area can be found on the STS Website.

1) Select a Concentration Area guided by the attached Socio-Cultural and Technical Courses:

   A. COMMUNICATION AND MEDIA (formerly Information Technology, Media & Society), pages 3-4
   B. INNOVATION AND ORGANIZATION (formerly Innovation, Technology & Organizations), pages 5-6
   C. NATURE AND ENVIRONMENT (formerly Environment & Sustainability), pages 7-8
   D. LIFE SCIENCES AND HEALTH (formerly Life Sciences & Biotechnology), pages 9-10
   E. POLITICS AND POLICY (formerly Policy, Security & Technology), pages 11-12

2) Review the B.A. and B.S. degree requirements for the Concentration Areas (note the 50-unit requirement may require taking additional Concentration Area Courses):

   **Declared before 9/1/2015:**
   B.A. Degree: 8 Socio-Cultural Courses + 4 Technical Courses
   B.S. Degree: 4 Socio-Cultural Courses + 8 Technical Courses

   **Declared on or after 9/1/2015:**
   B.A. Degree: 8 Socio-Cultural Courses (including 3 Foundational Courses) + 4 Technical Courses
   B.S. Degree: 4 Socio-Cultural Courses (including 3 Foundational Courses) + 8 Technical Courses

STS PROGRAM POLICIES

- All degree courses must be taken for a letter grade if offered. If declared after 8/31/2013, must receive a minimum grade of C in all Core Courses.

- Courses cannot be taken for less than the minimum amount of units listed in the attached course menus, even if the course is offered for fewer units.

- Courses may not be double-counted toward both Core and Concentration Area requirements.

- AP credit does not count toward the STS major.

- Students may use only one introductory computer science course, CS 105 OR CS 106A, toward STS Core & Concentration Area requirements if declared after 8/31/2013.

- Students are responsible for any prerequisites. It is recommended that STS majors take the Math Calculus sequence (or have AP credit), as many Technical Courses approved for Concentration Areas require it.

- Students may count no more than two approved course petitions (subject to STS staff approval) toward their individual STS Concentration Area requirements (courses may not be petitioned for the Core). Freshmen seminars are not eligible for petition.

- Transfer students may petition equivalent and/or relevant STS coursework from institutions outside Stanford University, provided the Registrar has already awarded transfer credit. All such petitions are subject to approval by the STS staff approval.
A. COMMUNICATION AND MEDIA APPROVED COURSES

SOCIO-CULTURAL COURSES (formerly social science and humanities courses)
If declared after 8/31/2015, include 3 Foundational Courses (see ◆).

- AMSTUD 143X: Starstuff: Space and the American Imagination (5, A)
- ARTHIST 157A: Histories of Photography (4, NO)
- ARTHIST 164A: Technology and the Visual Imagination (4, W)
- ARTHIST 245: Art, Business & the Law (5, NO)
- ARTHIST 263B: The View through the Windshield: Cars and the American Landscape (4, NO)
- ARTSTUDI 236: Future Media, Media Archaeologies (3-4, NO)
- ARTSTUDI 285: Topics in Media Studies: Street Media (4, NO)
- COMM 1A: Mass Media, Society, and Democracy (4-5, A)
- COMM 106: Communication Research Methods (4-5, W)
- COMM 108: Media Processes and Effects (4-5, S)
- COMM 120W: Digital Media in Society (4-5, A)
- COMM 137W: The Dialogue of Democracy (4-5, W)
- COMM 140: Digital Media Entrepreneurship (3-5, NO)
- COMM 142W: Media Economics (4-5, S)
- COMM 166: Virtual People (4-5, W)
- COMM 169: Computers and Interfaces (4-5, NO)
- COMM 172: Media Psychology (4-5, W)
- COMPLIT 271A: Futurity: Why the Past Matters (3-5, NO)
- CS 181: Computers, Ethics, and Public Policy [Prereq: CS 106B or CS106X] (4, A)
- CS 546: Seminar on Liberation Technologies (1, A)
- ECON 153: Economics of the Internet [Prereq: ECON 51, ECON 102B] (5, NO)
- EDUC 226: Curating Experience: Representation in and beyond Museums (3-4, W)
- EDUC 358: Learning, Sharing, Publishing, and Intellectual Property (3-4, NO)
- ENGLISH 184C: Data and Knowledge in the Humanities (5, NO)
- ENGLISH 202: History of the Book (5, W)
- ENGR 110: Perspectives in Assistive Technology (3, W)
- ENGR 129: The Internet in Global Context (4, A/W/S)
- ENGR 131 (formerly STS 115): Ethical Issues in Engineering (4, A/W/S)
- ENGR 145: Technology Entrepreneurship (4, A/S/SUM)
- FILMSTUD 110: Science Fiction Cinema (4, NO)
- GERMAN 154: Poetic Thinking Across Media (4, W)
- HISTORY 205A: The History of Information (4-5, S)
- HISTORY 208A: Science and Law in History (4-5, NO)
- MS&E 180: Organizations: Theory and Management (4, A/S)
- MS&E 189: Social Networks - Theory, Methods, and Applications (3, W)
- MS&E 197: Ethics, Technology, and Public Policy (5, NO)
- PSYCH 30: Introduction to Perception (3, A)
- PSYCH 75: Introduction to Cultural Psychology (5, NO)
- RELIGST 31: The Religious Life of Things (3-5, NO)
- STS 140: Science, Technology and Politics (5, NO)
- STS 160Q: Technology in Contemporary Society (4, NO)
- STS 191: Introduction to Research in STS (4, W)
- SYMSYS 100: Minds and Machines (4, A)
- SYMSYS 245 (formerly 145): Cognition in Interaction Design (3, W)

Studying abroad? For approved overseas courses in this Concentration Area, see pages 13-14.
TECHNICAL COURSES (formerly science and engineering courses)

- ARTSTUD 160: Intro to Digital/Physical Design (3-4, A/W/S)
- ARTSTUD 177: Video Art I (4, A/W)
- ARTSTUD 179: Digital Art I (4, A/W)
- ARTSTUD 275: Introduction to Digital Photography and Visual Images (4, A/S)
- CEE 112A: Industry Applications of Virtual Design & Construction (3-4, W)
- CS 105: Introduction to Computers (3-5, A)
- CS 106A: Programming Methodology (3-5, A/W/S/SUM)
- CS 106B: Programming Abstractions [Prereq: CS 106A] (3-5, A/W/S/SUM)
- CS 106X: Programming Abstractions (Accelerated) [Prereq: CS 106A] (3-5, A/W)
- CS 107: Computer Organization and Systems [Prereq: CS 106B or CS 106X] (3-5, A/W/S)
- CS 108: Object-Oriented Systems Design [Prereq: CS 107] (3-4, A/W)
- CS 124: From Languages to Information [Prereq: CS 103, 107, 109] (3-4, W)
- CS 144: Introduction to Computer Networking [Prereq: CS 110] (3-4, A)
- CS 145: Introduction to Databases [Prereq: CS 103 or 107] (3-4, A)
- CS 147: Introduction to Human-Computer Interaction Design [Prereq: CS 106B or CS 106X] (3-5, A)
- CS 224W: Social and Information Networks (3-4, A)
- CS 255: Introduction to Cryptography (3, W)
- CS 376: Human-Computer Interaction Research [Prereq: CS 147] (3-4, NO)
- EE 101A: Circuits I [Prereq: PHYSICS 43] (4, W, SUM)
- EE 101B: Circuits II [Prereq: EE 101A, EE 102A] (4, S)
- EE 102A: Signal Processing and Linear Systems I [Prereq: MATH 53 or ENGR 155A] (4, W/SUM)
- EE 102B: Signal Processing and Linear Systems II [Prereq: EE102A] (4, S)
- EE 168: Introduction to Digital Image Processing (3-4, W)
- EE 169: Introduction to Bioimaging [Prereq: EE 102A, EE 102B] (3, A)
- ENGR 40P: Physics of Electrical Engineering [Prereqs: Physics 43] (5, NO)
- FILMSTUD 6: Introduction to Digital Media (5, W)
- MS&E 107: Interactive Management Science (3, A/SUM)
- MS&E 111: Introduction to Optimization [Prereq: Math 51] (4, A/S)
- MS&E 120: Probabilistic Analysis [Prereq: Math 51] (5, A)
- MS&E 130: Information Networks and Services [Prereq: MS&E 111, MS&E 120, CS 106A] (3, W)
- MUSIC 220A: Fundamentals of Computer-Generated Sound (3-4, A)
- MUSIC 220B: Compositional Algorithms, Psychoacoustics, and Computational Music (3-4, W)
- MUSIC 254: Music Query, Analysis, and Style Simulation [Prereq: MUSIC 253] (3-4, S)
- MUSIC 257: Neuroplasticity and Musical Gaming (3-5, S)

Updated 1/6/2016
B. INNOVATION AND ORGANIZATION APPROVED COURSES

SOCIO-CULTURAL COURSES (formerly social science and humanities courses)
If declared after 8/31/2015, include 3 Foundational Courses (see ●).

- ANTHRO 41: Genes and Identity (3, W)
- ANTHRO 136: The Anthropology of Global Supply Chains (5, S)
- ARTHIST 147: Modernism and Modernity (4, NO)
- ARTHIST 263B: The View through the Windshield: Cars and the American Landscape (4, NO)
- ARTSTUDI 236: Future Media, Media Archaeologies (3-4, NO)
- BIO 182: Modeling Cultural Evolution (3, NO)
- CEE 32B (formerly ARTHIST 232B): Design Theory (4, W)
- CLASSICS 151: Ten Things: An Archaeology of Design (3, S) ●
- COMM 140: Digital Media Entrepreneurship (3-5, NO)
- COMM 169: Computers and Interfaces (4-5, NO)
- CS 181: Computers, Ethics and Public Policy [Prereq: CS 106B or 106X] (4, A)
- CS 546: Seminar on Liberation Technologies (1, A)
- ECON 113: Economics of Innovation [Prereq: ECON 51, ECON 102B] (5, W)
- ECON 116: American Economic History [Prereq: ECON 1A] (5, NO)
- ECON 118: Development Economics [Prereq: ECON 52, ECON 102B] (5, W)
- ECON 145: Labor Economics [Prereq: ECON 51, ECON 102B] (5, A)
- ECON 153: Economics of the Internet [Prereq: ECON 51, ECON 102B] (5, NO)
- ECON 158: Regulatory Economics [Prereq: ECON 51] (5, NO)
- ENGLISH 184C: Data and Knowledge in the Humanities (5, NO) ●
- ENGR 129: The Internet in Global Context (4, A/W/S)
- ENGR 145: Technology Entrepreneurship (4, A/S/SUM)
- HISTORY 1C: Global History: Empires, Technology, and Modernity (3-5, S) ●
- HISTORY 131: Leonardo's World: Science, Technology, and Art in the Renaissance (5, W) ●
- HISTORY 140: World History of Science (5, W) ●
- HISTORY 140A: Scientific Revolution (5, A) ●
  or HISTORY 232F: Scientific Revolution (5, NO) ●
- HISTORY 144: Women and Gender in Science, Medicine and Engineering (5, S) ●
  or HISTORY 44Q: Gendered Innovations in Science, Medicine, Engineering, and Environment (4-5, S) ●
- HISTORY 203C: History of Ignorance (5, A)
- HISTORY 208A: Science and Law in History (4-5, NO) ●
- HISTORY 219C: Science, Technology, and Modernity in the Soviet Union (5, NO) ●
- HUMBIO 173: Science, Innovation, and the Law [Prereq: HUMBIO Core or instructor consent] (5, A) ●
- ME 120: History and Philosophy of Design (3, S)
- ME 177: Global Engineers’ Education (3, S)
- ME 214: Good Products, Bad Products (3-4, W) ●
- ME 297: Forecasting for Innovators: Technology, Tools, and Social Change (3, W)
- MS&E 175: Innovation, Creativity, and Change (3-4, W)
- MS&E 177: Creativity Rules (4, A)
- MS&E 180: Organizations: Theory and Management (4, A/S) ●
- MS&E 185: Global Work (4, W/S)
- MS&E 189: Social Networks - Theory, Methods, and Applications (3, W) ●
- MS&E 197: Ethics, Technology, and Public Policy (5, NO) ●
- PSYC 136A or 136B: Valuescience: Shedding Illusion to Live Better (3-4, A/S)
- PUBLPOL 102: Organizations and Public Policy [Prereq: ECON 1] (4-5, S)
- PUBLPOL 134: Ethics On the Edge: Business, Non-Profit Organizations, Government, and Individuals (3, S)
- PUBLPOL 194: Technology Policy (3-4, NO) ●
- PUBLPOL 353: Science and Technology Policy (3-4, S) ●
- RELIGST 31: The Religious Life of Things (3-5, NO) ●
- SOC 114: Economic Sociology (4, NO) ●
- SOC 160: Formal Organizations (4, NO)
- SOC 161: The Social Science of Entrepreneurship (4, NO)
- SOC 162: Markets and Governance (4, S)
- STS 140: Science, Technology and Politics (5, NO) ●
- STS 160Q: Technology in Contemporary Society (4, NO)
- STS 190: Issues in Technology and the Environment (4, S) ●
- STS 191: Introduction to Research in STS (4, W) ●
- SYMSYS 100: Minds and Machines (4, A)
- SYMSYS 245 (formerly 145): Cognition in Interaction Design (3, W)

**TECHNICAL COURSES** (formerly science and engineering courses)
- ARTSTUDI 160: Intro to Digital/Physical Design (3-4, A/W/S)
- CEE 146A: Engineering Economy (3, W)
- CS 105: Introduction to Computers (3-5, A)
- CS 106A: Programming Methodology (3-5, A/W/S/SUM)
- CS 106B: Programming Abstractions [Prereq: CS 106A] (3-5, A/W/S/SUM)
- CS 106X: Programming Abstractions (Accelerated) [Prereq: CS 106A] (3-5, A/W)
- CS 107: Computer Organization and Systems [Prereq: CS 106B or 106X] (3-5, A/W/S)
- CS 108: Object-Oriented Systems Design [Prereq: CS 107] (3-4, A/W)
- CS 124: From Languages to Information [Prereq: CS 103, 107, 109] (3-4, W)
- CS 147: Introduction to Human-Computer Interaction Design [Prereq: CS 106B or 106X] (3-5, A)
- CS 223A: Introduction to Robotics (3, W)
- CS 225A: Experimental Robotics [Prereq: CS 223A or equivalent] (3, S)
- CS 376: Human-Computer Interaction Research [Prereq: CS 147] (3-4, NO)
- CS 402: Beyond Bits and Atoms: Designing Technological Tools (3-4, W)
- CS 402L: Beyond Bits and Atoms (1-3, W)
- EE 101A: Circuits I [Prereq: PHYSICS 43] (4, W/SUM)
- EE 101B: Circuits II [Prereq: EE101A, EE102A] (4, S)
- EE 102A: Signal Processing and Linear Systems I [Prereq: MATH 53 or ENGR 155A] (4, W/SUM)
- EE 102B: Signal Processing and Linear Systems II [Prereq: EE102A] (4, S)
- EE 169: Introduction to Bioimaging [Prereq: EE 102A, EE 102B] (3, A)
- ENGR 14: Intro to Solid Mechanics [Prereq: PHYSICS 41] (4, A/W/S)
- ENGR 40M: An Intro to Making: What is EE [Prereq: CS 106A] (3-5, A/S)
- ENGR 40P: Physics of Electrical Engineering [Prereqs: Physics 43] (5, NO)
- ME 101: Visual Thinking: (4, A/W/S)
- ME 115A: Introduction to Human Values in Design [Prereq: ME 101] (3, A)
- ME 115B: Product Design Methods [Prereq: ME 115A] (3, W)
- ME 203: Design and Manufacturing (4, A/W/S)
- MS&E 52: Introduction to Decision Making (3, SUM) – May take MS&E 52 or MS&E 152
- MS&E 107: Interactive Management Science (3, A/SUM)
- MS&E 111: Introduction to Optimization [Prereq: Math 51] (4, A/S)
- MS&E 120: Probabilistic Analysis [Prereq: Math 51] (5, A)
- MS&E 121: Introduction to Stochastic Modeling [Prereq: MS&E 120 or STATS 116] (4, S)
- MS&E 130: Information Networks and Services [Prereq: MS&E 111, MS&E 120, CS 106A] (3, W)
- MS&E 152: Introduction to Decision Analysis (3-4, S) – May take MS&E 152 or MS&E 52
- MUSIC 220A: Fundamentals of Computer-Generated Sound (3-4, A)
- MUSIC 220B: Compositional Algorithms, Psychoacoustics, and Computational Music (3-4, W)
- MUSIC 257: Neuropasticity and Musical Gaming (3-5, S)
C. NATURE AND ENVIRONMENT APPROVED COURSES

SOCIO-CULTURAL COURSES (formerly social science and humanities courses)
If declared after 8/31/2015, include 3 Foundational Courses (see ●).

- AMSTUD 143X: Starstuff: Space and the American Imagination (5, A)
- ANTHRO 90C: Theory of Ecological and Environmental Anthropology (5, W) ●
- ANTHRO 126: Urban Culture in Global Perspective (5, A) ●
- ANTHRO 147: Nature, Culture, Heritage (5, NO)
- ANTHRO 160: Social and Environmental Sustainability: The Costa Rican Case (3-5, S)
- ANTHRO 162: Indigenous Peoples and Environmental Problems (3-5, S) ●
- ANTHRO 166: Political Ecology of Tropical Land Use: Conservation, Natural Resource Extraction, and Agribusiness (3-5, NO)
- ANTHRO 170: Australian Ecosystems: Human Dimensions and Environmental Dynamics (3, NO)
- ARTHIST 263B: The View through the Windshield: Cars and the American Landscape (4, NO)
- CLASSICS 55 (formerly URBANST 115): Urban Sustainability: Long-Term Archaeological Perspectives (3-5, NO)
- EARTHSYS 61Q: Food and Security (3, A)
- EARTHSYS 105: Food and Community: New Visions for a Sustainable Future (3, NO)
- EARTHSYS 112: Human Society & Environmental Change [Prereq: ECON 1] (4, A) ●
- EARTHSYS 121: Building a Sustainable Society: New Approaches for Integrating Human and Environmental Priorities (3, S)
- EARTHSYS 181: Urban Agriculture in the Developing World (3-4, NO)
- EARTHSYS 184: Climate and Agriculture (3-4, NO)
- EARTHSYS 185: Feeding Nine Billion (4-5, W)
- ECON 106: World Food Economy (5, S) ●
- ENGLISH 168: Imagining the Oceans (5, S)
- GERMAN 285: Environmentalism, Literature and Cultural Criticism (3-5, NO) ●
- HISTORY 1C: Global History: Empires, Technology, and Modernity (3-5, S) ●
- HISTORY 131: Leonardo's World: Science, Technology, and Art in the Renaissance (5, W) ●
- HISTORY 140: World History of Science (5, W) ●
- HISTORY 140A: Scientific Revolution (5, A) ●
  or HISTORY 232F: Scientific Revolution (5, NO) ●
- HISTORY 203C: History of Ignorance (5, A)
- HISTORY 203J: Water in World History (4-5, A) ●
- HISTORY 207G: The Age of Discovery: Maritime Science and Empire, 1400-1850 (4-5, S)
- HISTORY 208A: Science and Law in History (4-5, NO) ●
- HISTORY 254: Popular Culture and American Nature (5, NO) ●
- HISTORY 278S: The Ethical Challenges of Climate Change (4-5, NO) ●
- HUM BIO 2B: Culture, Evolution and Society (5, A)
- HUM BIO 4B: Environmental and Health Policy Analysis (5, S)
- ME 297: Forecasting for Innovators: Technology, Tools, and Social Change (3, W)
- MS&E 92Q: International Environmental Policy (3, W)
- PHIL 60: Introduction to Philosophy of Science (5, W) ●
- POL SCI 1106: Governing the Global Economy (5, W)
- POL SCI 233F: Science, Technology, and Society in the Face of the Looming Disaster (3-5, W) ●
- SIW (Stanford in Washington) 116: International Environmental Policy (5, W)
- STS 140: Science, Technology and Politics (5, NO) ●
- STS 190: Issues in Technology and the Environment (4, S) ●
- STS 191: Introduction to Research in STS (4, W) ●
- URBANST 164: Sustainable Cities (4-5, W)

Studying abroad? For approved overseas courses in this Concentration Area, see pages 13-14.
C. NATURE AND ENVIRONMENT (Continued)

TECHNICAL COURSES (formerly science and engineering courses)

- BIO 43: Plant Biology, Evolution, and Ecology [Prereqs: CHEM 31A and 31B or 31X, 33] (5, S)
- BIO 101: Ecology [Prereq: BIO 43] (4, A)
- BIO 144: Conservation Biology: A Latin American Perspective [Prereqs: BIO 101, or BIO 43 or HUMBIO 2A] (3, S)
- BIOHOPK 172H: Marine Ecology: From Organisms to Ecosystems [Prereq: BIO Core] (5, W)
- BIOHOPK 187H: Sensory Ecology (4, W)
- CEE 64: Air Pollution and Global Warming: History, Science, and Solutions (3, W)
- CEE 70: Environmental Science and Technology (3, W/SUM)
- CEE 100: Managing Sustainable Building Projects (4, A)
- CEE 107A (formerly CEE 173A): Understanding Energy (3, A/S)
- CEE 120A: Building Information Modeling Workshop (3-4, A)
- CEE 124: Sustainable Development Studio (3-5, A/W/S)
- CEE 176A: Energy Efficient Buildings (3-4, W)
- CEE 176B: Electric Power: Renewables and Efficiency (3-4, S)
- CEE 272R: Modern Power Systems Engineering (3, S)
- EARTHSYS 101: Energy and the Environment (3, W)
- EARTHSYS 102: Renewable Energy Sources and Greener Energy Processes (3, S)
- EARTHSYS 104: The Water Course (3, W)
- EARTHSYS 155: Science of Soils (3-4, S)
- EARTHSYS 180B: Principles and Practices of Sustainable Agriculture (3-4, A/S)
- ENERGY 104: Transition to Sustainable Energy Systems (3, S)
- ENERGY 120: Fundamentals of Petroleum Engineering (3, A)
- ENGR 25E: Energy: Chemical Transformations for Production, Storage, and Use (3, W)
- ENGR 30: Engineering Thermodynamics (3, A/W/S/SUM)
- MATSCI 154: Thermodynamic Evaluation of Green Energy Technologies (4, S)
- MATSCI 156: Solar Cells, Fuel Cells, and Batteries: Materials for the Energy Solution (3-4, A)
- PHYSICS 240: Introduction to the Physics of Energy (3, A)
- PHYSICS 241: Introduction to Nuclear Energy (3, W)

Studying abroad? For approved overseas courses in this Concentration Area, see pages 13-14.
D. LIFE SCIENCES AND HEALTH APPROVED COURSES

Note: HUMBIO typically requires students to take the entire Core, which is HUMBIO 2A, 2B, 3A, 3B, 4A, and 4B

SOCIO-CULTURAL COURSES (formerly social science and humanities courses)
If declared after 8/31/2015, include 3 Foundational Courses (see ●).

- AMSTUD 156H: Women and Medicine in US History: Women as Patients, Healers and Doctors (5, S) ●
- ANTHRO 15: Sex and Gender (3, NO)
- ANTHRO 41: Genes and Identity (3, W) ●
- ANTHRO 82: Medical Anthropology (4, W) ●
- ANTHRO 138: Medical Ethics in a Global World: Examining Race, Difference and Power in the Research Enterprise (5, A) ●
- ANTHRO 177: Environmental Change and Emerging Infectious Diseases (3-5, NO)
- ANTHRO 186: Culture and Madness (5, NO) ●
- ARTSTUDI 284: Art & Biology (4, NO)
- BIOE 131: Ethics in Bioengineering (3, S)
- EDUC 340: Psychology and American Indian Mental Health (3-5, S)
- FRENCH 219: The Renaissance Body in French Literature and Medicine (3-5, W)
- GENE 104Q: Law and the Biosciences (3, A)
- HISTORY 41Q: Madwomen: The History of Women and Mental Illness in the U.S. (3, W) ●
- HISTORY 130A: In Sickness and In Health: Medicine and Society in the United States: 1800-Present (5, W) ●
- HISTORY 140: World History of Science (5, W) ●
- HISTORY 144: Women and Gender in Science, Medicine and Engineering (5, S) ●
- or HISTORY 44Q: Gendered Innovations in Science, Medicine, Engineering, and Environment (4-5, S) ●
- HISTORY 203C: History of Ignorance (5, A)
- HISTORY 208A: Science and Law in History (4-5, NO) ●
- HISTORY 243C: Colonial Science and Medicine (4-5, W) ●
- HISTORY 243G: Tobacco and Health in World History (4-5, A) ●
- HISTORY 264G: The Social History of Mental Illness in the United States (5, S) ●
- HUMBIO 2B: Culture, Evolution, Society (5, A)
- HUMBIO 3B: Behavior, Health, and Development (5, W)
- HUMBIO 4B: Environmental and Health Policy Analysis (5, S)
- HUMBIO 122S: Social Class, Race, Ethnicity, and Health (4, W)
- HUMBIO 174: Foundations of Bioethics (3, S)
- MED 157: Foundations for Community Health Engagement (3, S)
- PHIL 60: Introduction to Philosophy of Science (5, W) ●
- PHIL 63S: Introduction to Bioethics (3, NO)
- PHIL 167B: Philosophy, Biology, & Behavior [Prereq: 167A; or one PHIL course & a BIO course or HUMBIO core] (4, NO)
- POLISCI 216E: International History and International Relations Theory (4-5, W)
- PSYCH 30: Introduction to Perception (3, A)
- PSYCH 75: Introduction to Cultural Psychology (5, NO)
- PUBLPOL 122: Biosecurity and Bioterrorism Response (4-5, S)
- RELIGST 22: Method in the Sciences of Nature and Society (4, S)
- STS 140: Science, Technology and Politics (5, NO) ●
- STS 190: Issues in Technology and the Environment (4, S) ●
- STS 191: Introduction to Research in STS (4, W) ●

Studying abroad? For approved overseas courses in this Concentration Area, see pages 13-14.

Updated 1/6/2016
**TECHNICAL COURSES** (formerly science and engineering courses)

- BIO 41: Genetics, Biochemistry & Molecular Biology [Prereq: CHEM 31X (or 31A,B), 33] (5, A) - **May take BIO 41 or HUMBIO 2A**
- BIO 42: Cell Biology and Animal Physiology [Prereq: CHEM 31X (or 31A,B), 33] (5, W) - **May take BIO 42 or HUMBIO 3A**
- BIO 43: Plant Biology, Evolution, and Ecology [Prereqs: CHEM 31X or 31a and 31B, 33] (5, S)
- BIO 44X: Core Molecular Biology Laboratory (5, A/W)
- BIO 44Y: Core Plant Biology & Eco Evo Laboratory (5, A/S)
- BIO 109A: The Human Genome and Disease (3, W) – **May take BIO 109A or 109B**
- BIO 109B: The Human Genome and Disease: Genetic Diversity & Personalized Medicine (3, S) - **May take BIO 109A or 109B**
- BIO 144: Conservation Biology: A Latin American Perspective [Prereqs: BIO 101, or BIO 43 or HUMBIO 2A] (3, S)
- BIO 150: Human Behavioral Biology (5, S)
- BIOE 44: Fundamentals for Engineering Biology Lab (4, A)
- BIOE 80: Introduction to Bioengineering (4, S)
- BIOE 101: Systems Biology [Prereq: CME 102; BIO 41, BIO 42] (3, A)
- BIOE 103: Systems Physiology & Design [Prereq: MATH 41, 42; CME 102; PHYSICS 41, 43; BIO 41, 42] (4, S)
- BIOE 115 (formerly BIOE 45): Computational Modeling for Microbial Communities (4, NO)
- CHEM 31A: Chemical Principles I (5, A/SUM)
- CHEM 31B: Chemical Principles II [Prereq: CHEM 31A] (5, W/SUM)
- CHEM 31X: Chemical Principles Accelerated [Prereq: AP CHEM] (5, A)
- CHEM 33: Structure and Reactivity [Prereq: CHEM 31A, 31B (or 31x)] (5, W/S)
- CHEM 130: Organic and Bio-organic Chemistry Laboratory [Prereq: CHEM 36] (3, A/W)
- CHEM 135: Physical Chemical Principles [Prereqs: CHEM 31A and 31B or 31X] (3, W)
- CHEM 171: Physical Chemistry I [Prereqs: CHEM 31A and 31B or 31X, 35, MATH 51] (3, S)
- COMPMED 87Q: Introduction to the Mouse in Biomedical Research (3, A)
- EE 102A: Signal Processing and Linear Systems I [Prereq: MATH 53 or ENGR 155A] (4, W/SUM)
- EE 102B: Signal Processing and Linear Systems II [Prereq: EE102A] (4, S)
- EE 169: Introduction to Bioimaging [Prereq: EE 102A, EE 102B] (3, A)
- HUMBIO 2A: Genetics, Evolution and Ecology (5, A) - **May take HUMBIO 2A or BIO 41**
- HUMBIO 3A: Cell and Developmental Biology (5, W) - **May take HUMBIO 3A or BIO 42**
- HUMBIO 4A: The Human Organism (5, S)

Studying abroad? For approved overseas courses in this Concentration Area, see pages 13-14.
E. POLITICS AND POLICY APPROVED COURSES

SOCIO-CULTURAL COURSES (formerly social science and humanities courses)
If declared after 8/31/2015, include 3 Foundational Courses (see ●).

- AMSTUD 143X: Starstuff: Space and the American Imagination (5, A)
- ANTHRO 166: Political Ecology of Tropical Land Use: Conservation, Natural Resource Extraction, and Agribusiness (3-5, NO)
- COMM 133: Need to Know: The Tension between a Free Press and National Security Decision Making (4-5, S)
- COMPLIT 171: The Ethics of Jihad (5, NO)
- COMPLIT 271A: Futurity: Why the Past Matters (3-5, NO) ●
- CS 181: Computers, Ethics and Public Policy [Prereq: CS 106B or CS 106X] (4, A)
- EARTHYSYS 61Q: Food and Security (3, A)
- ECON 106: World Food Economy (5, S) ●
- ENGLISH 184C: Data and Knowledge in the Humanities (5, NO) ●
- ENGR 129: The Internet in Global Context (4, A/W/S)
- FRENCH 122: Nation in Motion: Film, Race, and Immigration in Contemporary French Cinema (3-5, NO)
- GERMAN 132: Dynasties, Dictators, Democrats: History and Politics in Germany (3-5, A)
- GERMAN 264: Post-Cold War German Foreign Policy (3-5, NO)
- HISTORY 1C: Global History: Empires, Technology, and Modernity (3-5, S) ●
- HISTORY 102: The History of the International System (5, S)
- HISTORY 103F: The Changing Face of War: Introduction to Military History (5, A)
- HISTORY 140: World History of Science (5, W) ●
- HISTORY 203C: History of Ignorance (5, A)
- HISTORY 203J: Water in World History (4-5, A) ●
- HISTORY 207G: The Age of Discovery: Maritime Science and Empire, 1400-1850 (4-5, S)
- HISTORY 208A: Science and Law in History (4-5, NO) ●
- HISTORY 219C: Science, Technology, and Modernity in the Soviet Union (5, NO) ●
- HISTORY 235: The Renaissance of War: Politics, Technology, and War in Late Medieval and Renaissance Italy (5, NO)
- HISTORY 261G: Presidents and Foreign Policy in Modern History (5, W)
- HISTORY 277D: U.S. Intervention and Regime Change in 20th Century Latin American (5, NO)
- HUMBIO 173: Science, Innovation, and the Law [Prereq: HUMBIO Core or instructor consent] (5, A) ●
- INTNLREL 140A: International Law and International Relations (5, A/SUM)
- INTNLREL 140C: The U.S., U.N. Peacekeeping, and Humanitarian War (5, A)
- INTNLREL 180A: Transitional Justice, Human Rights, and International Criminal Tribunals (3-5, S)
- IPS 203: Issues in International Economics (5, W)
- IPS 219: Intelligence and National Security (3, A)
- IPS 250: International Conflict Resolution (3, NO)
- MS&E 193: Technology and National Security (3, A) ●
- MS&E 197 (formerly STS 110): Ethics, Technology, and Public Policy (5, NO) ●
- POLSCI 110G: Governing the Global Economy (5, W)
- POLSCI 110Y: War and Peace in American Foreign Policy (5, S)
- POLSCI 114D: Democracy, Development, and the Rule of Law (5, A)
- POLSCI 116: The International History of Nuclear Weapons (5, S)
- POLSCI 122: Introduction to American Law (3-5, A)
- POLSCI 123 (formerly POLSCI 2): Politics and Public Policy (4-5, W)
- POLSCI 150A: Data Science for Politics (5, A)
- POLSCI 214R: Challenges and Dilemmas in American Foreign Policy (5, W)
- POLSCI 216E: International History & International Relations Theory (4-5, W)
- POLSCI 224L: The Psychology of Communication About Politics in America (4-5, W)
- POLSCI 233F: Science, Technology, and Society in the Face of the Looming Disaster (3-5, W) ●
- PUBLPOL 122: Biosecurity and Bioterrorism Response (4-5, S)
- PUBLPOL 194: Technology Policy (3-4, NO) ●
- PUBLPOL 353: Science and Technology Policy (3-4, S) ●
● STS 140: Science, Technology and Politics (5, NO)◆
● STS 190: Issues in Technology and the Environment (4, S)◆
● STS 191: Introduction to Research in STS (4, W)◆

TECHNICAL COURSES (formerly science and engineering courses)

● CHEM 31A: Chemical Principles I (5, A/SUM)
● CHEM 31B: Chemical Principles II [Prereq: CHEM 31A] (5, W/SUM)
● CHEM 31X: Chemical Principles Accelerated [Prereq: AP CHEM] (5, A)
● CHEM 33: Structure and Reactivity [Prereq: CHEM 31A, 31B (or 31x)] (5, W/S)
● CS 105: Introduction to Computers (3-5, A)
● CS 106A: Programming Methodology (3-5, A/W/S/SUM)
● CS 106B: Programming Abstractions [Prereq: CS 106A] (3-5, A/W/S/SUM)
● CS 106X: Programming Abstractions (Accelerated) [Prereq: CS 106A] (3-5, A/W)
● CS 107: Computer Organization and Systems [Prereq: CS 106B or CS 106X] (3-5, A/W/S)
● CS 108: Object-Oriented Systems Design (3-4, A/W)
● CS 255: Introduction to Cryptography (3, W)
● MS&E 93Q: Nuclear Weapons, Energy, Proliferation and Terrorism (3, S)
● MS&E 107: Interactive Management Science (3, A/SUM)
● PHYSICS 41 & 42: Mechanics & Classical Mechanics Lab [Prereq: PHYSICS 19, MATH 19 or 41] (4 + 1, W)
● PHYSICS 43: Electricity and Magnetism [Prereq: PHYSICS 41, MATH 20 or 42 or 51] (4, S)
● PHYSICS 240: Introduction to the Physics of Energy (3, A)
● PHYSICS 241: Introduction to Nuclear Energy (3, W)

Studying abroad? For approved overseas courses in this Concentration Area, see pages 13-14.
BING OVERSEAS APPROVED COURSES BY CONCENTRATION

A. COMMUNICATION AND MEDIA CONCENTRATION
SOCIO-CULTURAL COURSES
- OSPBEIJ 17: Chinese Film Studies (4, A)
- OSPBEIJ 20: Communication, Culture, and Society: The Chinese Way (4, A)
- OSPBEIJ 42: Chinese Media Studies (4, S)
- OSPBER 7: A History of German Film (3-5, NO)
- OSPFLOR 44: Galileo: Genius, Innovation and the Scientific Revolution (5, NO)
- OSPFLOR 48: Sharing Beauty in Florence: Collectors, Collections and the Shaping of the Western Museum Tradition (4, W)
- OSPFLOR 49: On-Screen Battles: Filmic Portrayals of Fascism and World War II (5, W)
- OSPFLOR 134F: Italian Cinema and the Aesthetics of Modernism (5, NO)
- OSPKYOTO 65: Postwar Japan in Film (4-5, NO)
- OSPMADRD 45: Women in Art: Case Study in the Madrid Museums (4, W)
- OSPMADRD 71: Sociology of Communication (5, S)
- OSPOXFRD 57: The Rise of the Woman Writer 1660-1860 (5, W)
- OSPPARIS 30: The Avant Garde in France through Literature, Art and Theater (4, A)

B. INNOVATION AND ORGANIZATION CONCENTRATION
SOCIO-CULTURAL COURSES
- OSPBER 115X: German Economy: Past and Present (4-5, A)
- OSPBER 126X: A People’s Union? Money, Markets, and Identity in the EU (4-5, A)
- OSPBER 161X: The German Economy in the Age of Globalization (4-5, W)
- OSPCPCTWN 36: The Archaeology of Southern African Hunter Gatherers (4, SUM)
- OSPFLOR 17: The Evolution of Modern Italian Design (4, A)
- OSPFLOR 20: Design Driven Innovation: Italian Excellence (4, W)
- OSPFLOR 22: The Italian Way to Car Design (5, S)
- OSPFLOR 25: Italian Food: A Cultural History (5, NO)
- OSPFLOR 41: The Florentine Sketchbook: A Visual Arts Practicum (4, A)
- OSPFLOR 44: Galileo: Genius, Innovation and the Scientific Revolution (5, NO)
- OSPFLOR 48: Sharing Beauty in Florence: Collectors, Collections and the Shaping of the Western Museum Tradition (4, W)
- OSPFLOR 58: Space as History: Social Vision and Urban Change (4, S)
- OSPFLOR 115Y: Building the Cathedral and the Town Hall: Constructing and Deconstructing Symbols of a Civilization (4, A)
- OSPFLOR 134F: Italian Cinema and the Aesthetics of Modernism (5, NO)
- OSPISPAN 63: Soundscape Studies: Listening to Istanbul (4, NO)
- OSPKYOTO 54: Escaping Galapagos: Japan’s New Innovation Boom (5, S)
- OSPKYOTO 64: Japanese Popular Culture (4-5, NO)
- OSPMADRD 45: Women in Art: Case Study in the Madrid Museums (4, W)
- OSPMADRD 71: Sociology of Communication (5, S)
- OSPOXFRD 45: British Economic Policy since World War II (5, A)
- OSPOXFRD 74: History and Architecture of Oxford (4-5, NO)
- OSPPARIS 30: The Avant Garde in France through Literature, Art, and Theater (4, A)
- OSPPARIS 44: EAP: Analytical Drawing and Graphic Art (2, A/W/S)
- OSPPARIS 72: The Ceilings of Paris (4, A)
- OSPSANTG 29: Sustainable Cities: Comparative Transportation Systems in Latin America (4-5, S)
- OSPSANTG 71: Santiago: Urban Planning, Public Policy, and the Built Environment (4-5, A)
- OSPSANTG 119X: The Chilean Economy: History, International Relations, and Development Strategies (5, S)
- OSPSANTG 130X: The Chilean Economy in Comparative Perspective (5, A)
C. NATURE AND ENVIRONMENT CONCENTRATION

Socio-cultural Courses
- OSPBER 115X: The German Economy: Past and Present (4-5, A)
- OSPCPTWN 36: The Archaeology of Southern African Hunter Gatherers (4, SUM)
- OSPFLOR 44: Galileo: Genius, Innovation and the Scientific Revolution (5, NO)
- OSPKOTYO 45: Japan’s Energy-Environment Conundrum (4-5, W)
- OSPPARIS 74: Climate Change Challenges in France and Europe: from Project to Policy (4, NO)
- OSPPARIS 91: Globalization and Its Effect on France and the European Union (5, A)
- OSPSANTG 29: Sustainable Cities: Comparative Transportation Systems in Latin America (4-5, S)
- OSPSANTG 71: Santiago: Urban Planning, Public Policy, and the Built Environment (4-5, A)

Technical Courses
- OSPAUSTL 10: Coral Reef Ecosystems (3, A)
- OSPAUSTL 25: Freshwater Systems (3, A)
- OSPAUSTL 30: Coastal Forest Ecosystems (3, A)
- OSPFLOR 33: Under the Tuscan Sun: A Model for Agriculture and Sustainability (5, NO)
- OSPSANTG 31: The Chilean Energy System: 30 Years of Market Reforms (4-5, SUM)
- OSPSANTG 85: Marine Ecology of Chile and the South Pacific (5, S)

D. LIFE SCIENCES AND HEALTH CONCENTRATION

Socio-cultural Courses
- OSPFLOR 44: Galileo: Genius, Innovation and the Scientific Revolution (5, NO)
- OSPFLOR 87: The Future of Healthcare: Italy, Europe and the U.S. (4, NO)
- OSPMADRD 57: Health Care: A Contrastive Analysis between Spain and U.S. (4, S)
- OSPMADRD 72: Issues in Bioethics Across Cultures (4, W)
- OSPXFRD 27: Medical Ethics through Literature and Film (4, A)
- OSPPARIS 153X: Health Systems and Health Insurance: France and the U.S.—a Comparison across Space and Time (5, A)

Technical Courses
- OSPAUSTL 10: Coral Reef Ecosystems (3, A)
- OSPAUSTL 25: Freshwater Systems (3, A)
- OSPAUSTL 30: Coastal Forest Ecosystems (3, A)
- OSPFLOR 86: Stem Cells in Human Development and Regenerative Medicine (4-5, NO)
- OSPSANTG 85: Marine Ecology of Chile and the South Pacific (5, S)

E. POLITICS AND POLICY CONCENTRATION

Socio-cultural Courses
- OSPCPTWN 43: Public and Community Health in Sub-Saharan Africa (4, W/S/ SUM)
- OSPFLOR 49: On-Screen Battles: Filmic Portrayals of Fascism and World War II (5, W)
- OSPFLOR 87: The Future of Healthcare: Italy, Europe and the U.S. (4, NO)
- OSPISTAN 65: Comparative Political Economy of Emerging Powers (4, NO)
- OSPKYOTO 45: Japan’s Energy-Environment Conundrum (4-5, W)
- OSPMADRD 57: Health Care: A Contrastive Analysis between Spain and the U.S. (4, S)
- OSPPARIS 74: Climate Change Challenges in France and Europe: from Project to Policy (4, NO)
- OSPPARIS 91: Globalization and Its Effect on France and the European Union (5, A)
- OSPPARIS 153X: Health Systems and Health Insurance: France and the U.S.—a Comparison across Space and Time (5, A)
- OSPSANTG 71: Santiago: Urban Planning, Public Policy, and the Built Environment (4-5, A)
- OSPSANTG 119X: The Chilean Economy: History, International Relations, and Development Strategies (5, S)

Technical Courses
- OSPFLOR 33: Under the Tuscan Sun: A Model for Agriculture and Sustainability (5, NO)
- OSPSANTG 31: The Chilean Energy System: 30 Years of Market Reforms (4-5, SUM)