Science and Society

College of Agricultural and Environmental Sciences
David M. Rizzo, Ph.D., Program Director
Program Office, 152 Hutchison Hall 530-754-2777

Faculty
Arnold Bloom, Ph.D., Professor (Plant Sciences)
Richard M. Bostock, Ph.D., Professor (Plant Pathology)
James Carey, Ph.D., Professor (Entomology)
Gita Coaker, Ph.D., Assistant Professor (Plant Pathology)
Edward Caswell-Chen, Ph.D., Professor (Nematology)
Douglas R. Cook, Ph.D., Professor (Plant Pathology)
Randy Dahlgren, Ph.D., Professor (Land, Air and Water Resources) Academic Senate Distinguished Teaching Award
Michael Davis, Ph.D., Professor and Specialist in Agricultural Management and Rangeland Resources
Lynn Epstein, Ph.D., Professor (Plant Pathology)

Minor Program Requirements:

Units
Science and Society ........................................ 22-27
Science and Society 1 ......................... 4
Science and Society 2, 5, 15, 20, 30 ....... 2-4
One course from each of the four following areas:

- History and Philosophy of Science: Community and Regional Development 118, 122, 185, History and Philosophy of Science 150, Nature and Culture 100, Philosophy 107, 108, or 109 .......... 4
- Policy and Intervention in Agricultural and Resource Economics 120, 147, 150, Consumer Science 100, Environmental Science and Policy 160, Political Science 175, Sociology 155, or 181 ......... 3-4
- Communication of Science: Agricultural Education 172, Agricultural Management and Rangeland Resources 122, Anthropology 120, Communication 115, 130, 135, 138, 140, Community and Regional Development 174, Linguistics 163, Political Science 165 .......... 3-4
- Culture, Ethics, and Agriculture: Agricultural Management and Rangeland Resources 101, Community and Regional Development 142, Environmental Science and Policy 126, 132, Fiber and Polymer Science 110, International Agricultural Development 104, Plant Biology 151, Plant Pathology 140, or Sociology 144 .......... 3-4

Minor Adviser: D. M. Rizzo


Courses in Science and Society (SAS)

Lower Division
1. Critical Inquiry into Contemporary Issues (4)
Lecture/discussion—3 hours; discussion—1 hour. Contemporary issues, including global population trends, economic and environmental changes, cultural diversity and biodiversity, nutrition and food safety, fiber and textiles, changing consumer culture. Inquiry processes emphasize ethics, multiple disciplines, and multiple perspectives. GE credit: SciEng or SocSci, Div, Wrt I or SS, WE.—I. (I.) Caswell-Chen

2. Feeding the Planet: Influences on the Global Food Supply (3)
Lecture/discussion—3 hours. Scientific principles and dynamic interactions as involved in food production, food processing, nutrition, shelf life and marketing from differing viewpoints. Physical, biological and social science issues influencing the availability and safety of the food supply worldwide. GE credit: SciEng or SocSci, Wrt I or SS, WE.—II. (II.) Bos-tock, Davis

3. Science, Technology and Society (4)
Lecture—4 hours. Impact of developments in science and technology on the individual. Students gain understanding of how economics, politics, culture and values affect technological development. Not open for credit to students who have completed former course Applied Behavioral Sciences 18. Offered irregularly. GE credit: SciEng or SocSci, Wrt I or SS, WE.

4. Water in Popular Culture (3)
Film viewing—2 hours; discussion—1 hour. Lecture—1 hour. Importance of water in many aspects of society as revealed in films. GE credit: SciEng or SocSci, Wrt I or SS, WE.—I. (I.) Pasternack

5. Pathways to Discovery: Science and Society (3)
Lecture/discussion—3 hours. Highlights a current issue and/or controversy found in contemporary society and looks at how this problem impacts and is affected by the physical, social and biological sciences. Course varies. May be repeated two times for credit. Course not offered every year. GE credit: SciEng or SocSci, Wrt I or SS, WE.

7. Terrorism and War (4)
Lecture—3 hours; discussion—1 hour; term paper. Exploration of terrorism and war from science and social sciences perspectives. Terrorist cells and groups; biological, chemical, nuclear, and environmental terrorism; intelligence gathering and espionage; military strategy; genocide; episodic war; clash of civilizations; nation building; and future global scenarios. GE credit: SciEng or SocSci, Div, Wrt I or SS, WE.—I. (I.) Carey
7V. Terrorism and War (4)
Web Virtual Lecture—3 hours; autotutorial—5 hours, web electronic discussion—1 hour, extensive writing task on leadership and command of instructor. Terrorism and war from science and social sciences perspectives: terrorism (terrorist cells, WMD’s, religious extremism), warfare (military strategy, geneocide), and statecraft (diplomacy, clash of civilizations, epochal wars). GE credit: SciEng or SocSci, Wrt | SS, WC, WE.—Carey

8. Water Quality at Risk (3)
Lecture—2 hours; discussion—1 hour. Natural and human impacts to water quality. Balance of science and policy in all aspects of attaining, maintaining, and managing water quality, water contamination. Decoding popular media coverage of water quality and water contamination. (Same course as Environmental Science and Management 8.) Not open to students who have successfully completed Environmental and Resource Sciences 8. GE credit: SciEng or SocSci, Wrt | SE or SS, SL, WE.—II. (II.) Hermes

9. Crisis in the Environment (3)
Lecture—3 hours. Explores contemporary environmental issues by examining the causes, effects and solutions to a wide range of environmental problems facing the global ecosystem. Integrated discussion of political, societal and economic linkages with environmental problems. GE credit: SciEng or SocSci, Wrt | SE or SS, WE.—III. (III.) Dahlgren, Houlton

10. Water, Power, Society (3)
Lecture—2 hours; discussion—1 hour. Water resources issues. How water has been used to gain and win power. Water resources development in California as related to current and future sustainability of water quantity and quality. Roles of science and technology in addressing water problems. (Same course as Hydrologic Science 10.) GE credit: SciEng or SocSci, Wrt | SE or SS, SL.—I, II, III. (I, II, III.) Fogg

11. California Geography (3)
Lecture—2 hours; discussion—1 hour; term paper. Introduction to cultural, historical and biophysical processes that characterize the physical landscape of California and its relationship to human societies and their impacts on and alterations by human activities. Environmental issues in the State. GE credit: SciEng or SocSci, Wrt | SE or SS, WE.—I. (I.) Richards

12. Plants and Society (4)

13. Disease and Society (3)
Lecture—3 hours. Limited enrollment. Introduction to the concept of disease, the societal and personal impacts of past, present and future diseases, and the science behind disease discoveries, causes, evolution, diagnosis, treatment, and prevention. GE credit: SciEng or SocSci | SE or SS, SL.—I, II. (I, II.) Leveau

14. AIDS and Society (4)
Lecture—2 hours; seminar—0.3 hour; 1 hour. Biology of HIV transmission and AIDS and how a biological agent acts on and influences the structure of contemporary society. Includes the psychology of risk and stigma, gender issues, changes in social relationships and public policy, global implications. GE credit: SciEng or SocSci, Div, Wrt | SE or SS.—III. (III.) Radke

18. GIS and Society (3)
Lecture—2 hours, laboratory—3 hours; term paper or discussion—0.3 hours. Geographical Information Systems (GIS): concepts and a tool for change in society. Evaluate physical, biological and social impact of GIS in the context of case studies such as land, water and community planning. GE credit: SciEng or SocSci, Wrt | QL, SE or SS, SL, VL.—II. (II.) W. M. Leveau

20. Genetics and Society (4)
Lecture—3 hours; discussion—1 hour. Not open for credit to students who have completed course 148D. BASIC CONCEPTS: modern methods of bio-technology, the process of scientific discovery and the public perception of the process; present and future impact of genetics on society. GE credit: SciEng or SocSci, Wrt, Div | QL, SE or SS, SL, WC, WE.—I, II. (I, II.) Cooker, Cook, Epstein, Ronald

25. Global Climate Change: Convergence of Biological, Geophysical, & Social Sciences (3)

25V. Global Climate Change: Convergence of Biological, Geophysical, & Social Sciences (3)
Web virtual lecture; web electronic discussion—2 hours; autotutorial—5 hours; extensive writing—2 hours. Causes of global climate change and the biological, geophysical, and social consequences of such change. Methods used by different scientists for predicting future events of global affairs. Decision making under uncertainty. Students cannot take both course 025 and 025V for credit. GE credit: SciEng or SocSci | SE or SS, DD, DT, QL, SL, VL, WC, WE.—II. (II.) Milliken, Adams

30. Mushrooms, Molds, and Society (3)
Lecture/discussion—3 hours. Fungi as organisms with which humans interact daily, societal issues arising from these interactions. Fungi in medicine, religion, agriculture, and industry, as well as cultural perceptions of fungi. GE credit: SciEng or SocSci, Wrt | SE or SS.—I, II. (I, II.) Gilchrist, Gordon, Rizza

40. Photography: Bridging Art and Science (3)
Lecture/discussion—2 hours; studio—2 hours. Photography is used to explore the common ground between art and science. Photographic processes, creativity and aesthetics, chaos and order, principles of space, time and light. Photographic interpretation and documentation of the natural world. GE credit: ArtHum or SciEng or SocSci, Div, Wrt | AH or SS, SL, VL, WC.—III. (III.) Nathan

42. Earth, Water, Science, Song (3)

90A. Issues in Environmental and Resource Sciences (2)
Seminar—2 hours; two Saturday field trips. Prerequi- site: permission for lower division students. Discussion of historical and current issues in environmental and resource sciences. Lectures, reading and field trips will provide background for selected topics.—I, II, III. (I, II, III.)

90B. Observing and Writing in Biology (2)
Seminar—1 hour; laboratory—1 hour; term paper. Students will observe the interactions between microscopic organisms, conduct simple laboratory experiments, describe and analyze observations, and discuss scientific observations and writings.

90C. Herbal Medicine: Relevance for the 21st Century (2)
Seminar—2 hours. Medicinal usage of plants from biological, historical, and cultural perspectives. Broad contexts of holistic and scientific paradigms for understanding herbal medicine. Saturday field trip to teach herb identification.—II. (II.)

90D. Saving Endangered Plant Species: Problems and Prospects (2)
Seminar—2 hours. Endangered plant species illustrate the value of conservation biology. Topics include societal issues and plant germplasm conservation, comparisons to animal conservation issues, and the economics of and justification for preserving endangered plants.—I. (I.) Parfitt

90E. Biotechnology—a New Era, a New Challenge (2)
Seminar—2 hours. Animal biotechnology and its applications. Discussion topics include potential societal impacts of various technologies, factors shaping public opinion, and ethical and moral questions arising from new biotechnology applications.—I. (I.) Murray

90F. Food Distribution in a Hungry World (2)
Seminar—2 hours. The biological, technological, environmental, and socioeconomic factors related to food distribution systems at local, regional, national, and international levels. The potential for increasing worldwide food supply by reducing losses between harvest and consumption.—I. (I.) Wilson

90G. Science, Society and the Environment (2)
Seminar—2 hours. Contemporary environmental issues, scientific approaches to addressing these issues, and accompanying societal and ethical considerations.—II. (II.) Wilson

90X. Lower Division Seminar (1-4)
Seminar—1-4 hours. Prerequisite: lower division standing and consent of instructor. Examination of a special topic in Science and Society. May be repeated for credit. Readings, discussions, written assignments, or special activities such as fieldwork, laboratory work, etc. May be repeated for credit. Limited enrollment.—I, II, III, IV. (I, II, III, IV.)

91A. Explorations in Science and Society: Cultures and Identities (2)
Seminar—1 hour; extensive writing or discussion—1 hour. Prerequisite: participation in the summer Special Transitional Enrichment Program (STEP) or consent of instructor; course 1 concurrently. Exploration of linkages among identity and culture, multi-disciplinary inquiry, and agricultural and environmental science issues.—I. (I.)

91B. Explorations in Science and Society: Leadership and Collaboration (2)
Seminar—1 hour; extensive writing or discussion—1 hour. Prerequisite: course 91A or consent of instructor. Extends understanding of culture and identity to issues of leadership, collaboration, and social action in science and society. Includes a mandatory two and half day retreat.—II. (II.)

91C. Explorations in Science and Society: Engagement (2)
Seminar—1 hour; internship—3 hours. Prerequisite: course 91B or consent of instructor. Explorations of the concept of engagement in science and society from philosophical and practical perspectives. Explo-
rati of the concept of engagement based on lectures, self-reflection, discussions and three hours of K-12 school internships per week—II, III, III.

92. Internship in Science and Society (1-12)
Internship—3-36 hours. Prerequisite: lower division standing and consent of instructor. Supervised internship on and off campus, in the community, or in institutional settings. [P/NP grading only]

97. Tutoring in Science and Society (2-3)
Discussion/lecture—6-9 hours. Prerequisite: lower division standing; completion of course being tutored; consent of instructor. Tutoring in undergraduate Science and Society courses. Assisting with leading discussion groups under supervision of instructor(s) and teaching assistants. Acting as liaison between the students and course instructor(s) to foster effective collaboration and interaction. May not be repeated. [P/NP grading only]

98. Directed Group Study (1-5)
Prerequisite: consent of instructor. [P/NP grading only]

99. Special Study for Undergraduates (1-5)
Discussion—3-15 hours. Prerequisite: lower division standing and consent of instructor. [P/NP grading only]

Upper Division

110. Applications of Evolution in Medicine, Human Behavior, and Agriculture (4)
Lecture—2 hours; discussion—1 hour; term paper. Prerequisite: Biological Sciences 2A, 2B, and 2C. Class size limited to 20 students. Applications of evolutionary biology in medicine, human behavior, and agriculture. Examination of the imprint of evolution on the human life cycle from conception to death. GE credit: SciEng or SocSci, Wrt | SE or SS.—II. (II.)

120. Science and Contemporary Societal Issues (3)
Lecture/discussion—3 hours. Prerequisite: upper division standing. Study of a contemporary societal issue/problem emphasizing critical thinking with information drawn from several disciplines. Multiple instructors illustrate the necessity of an interdisciplinary and cooperative approach in solving important issues. Topic will vary. May be repeated one time for credit. Course not offered every year. GE credit: SciEng or SocSci, Wrt | SE or SS.—III. (III.)

121. Global Poverty: Critical Thinking and Taking Action (4)
Lecture—3 hours; discussion—1 hour. Social science and engineering analysis of causes and effects of world poverty and policies to reduce it via economic growth, technological aid, and community-level interventions, e.g., in potable water, sanitation, lighting, small scale energy, irrigation, health and micronutrients. GE credit: SocSci | SS, WC.—II. (II.)

130. Contemporary Leadership (4)
Lecture—3 hours; seminar—1 hour. Prerequisite: consent of instructor. Leadership, including issues, skills, and practices as they relate to individuals, organizations, diverse social settings and communities. Written and verbal communications, personality styles for collaborative work, and ethics. Limited enrollment. GE credit: OL—II, III. (II, III) King

125S. Biodiversity and Society in South Africa (4)
Lecture/discussion—3 hours; term paper or discussion—2 hours; fieldwork—2 hours. Prerequisite: acceptance into the Quarter Abroad Program “Biodiversity & Conservation in South Africa” and attendance in South Africa. Biodiversity in social context of South Africa; race, politics and conservation; use of indigenous plants and animals, weeds; issues and ecological concerns and activities; field trips. Offered irregularly. GE credit: SciEng or SocSci, Div, Wrt | SE or SS.—II. Cranston, Gullan

140. Genetics and Social Issues (4)
Lecture/discussion—3 hours; discussion—1 hour. Prerequisite: Biological Sciences 1A, 1B, 1C. Social issues arising from the development and use of modern methods of biotechnology. Presentation, evaluation, and critical discussions of the present and future impact of genetic technologies. Not open for credit to students who have completed course 20. GE credit: SocSci or Wrt—II. (II.)

190X. Science & Society Seminar (1-4)
Seminar—1-4 hours. Prerequisite: upper division standing and consent of instructor. In-depth examination at an upper division level of a special topic in Science and Society. Emphasis upon student participation in learning. Emphasis upon student participation in learning. May be repeated for credit. Limited enrollment. [P/NP grading only]—I, II, III. (I, II, III)

192. Internship in Science and Society (1-12)
Internship—3-36 hours. Prerequisite: upper division standing and consent of instructor. Supervised internship on or off campus, in the community, or in institutional settings. [P/NP grading only]

197. Tutoring in Science and Society (1-5)
Tutoring—3-15 hours. Prerequisite: upper division standing; completion of course being tutored or the equivalent. Tutoring of students in Science and Society courses. Assistance with discussion groups and laboratory sections under supervision of instructor. May be repeated for credit if tutoring another Science and Society course. [P/NP grading only]

198. Directed Group Study (1-5)
Prerequisite: consent of instructor. [P/NP grading only]

199. Special Study in Science and Society (1-5)
Prerequisite: upper division standing and consent of instructor. [P/NP grading only]

Graduate

299. Graduate Study (1-5)
Prerequisite: consent of instructor. May be repeated for credit when topic differs. [S/U grading only]

299. Graduate Research (1-12)
Prerequisite: graduate standing and consent of instructor. May be repeated for credit. [S/U grading only]

Professional

390. Teaching Methods in Science and Society (1)
Discussion—1 hour. Prerequisite: graduate level and consent of instructor. Practical experience in methods and problems related to teaching Science and Society courses. Designed for credit if tutoring another Science and Society course. [P/NP grading only]—I, II, III. (I, II, III)

Science and Technology Studies

(College of Letters and Science)
Joseph Dumit, Ph.D., Program Director
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Committee in Charge
Thomas Beamish, Ph.D. (Sociology)
Mario Biagishi, Ph.D. (Law and Science Studies of Science and Technology)
Patrick Carroll, Ph.D. (Sociology)
Timothy Choy, Ph.D. (Anthropology, Science and Technology Studies)
Marisol de la Cadena, Ph.D. (Anthropology)
Joseph Dumit, Ph.D. (Anthropology, Science and Technology Studies)
James Griesemer, Ph.D. (Philosophy)
Caren Kaplan, Ph.D. (American Studies)
Colin Milburn, Ph.D. (English, Science and Technology Studies)

Science and Technology Studies

Robertta Millstein, Ph.D. (Philosophy)
Kris Ravetto-Biggioli, Ph.D. (Cinema and Technocultural Studies, Science & Technology Studies)
Daniel Stolzenberg, Ph.D. (History)
Madhavi Sunder, J.D. (School of Law)

The Major Program

The Science and Technology Studies (STS) major is designed to facilitate the analysis and synthesis of science, technology, and medicine in a way that actively creates connections between the varieties of perspectives and concepts in the humanities and the sciences. The STS major takes science, technology, medicine, and their social, political, economic, and cultural contexts as its objects of study. As such, the STS major draws on the research programs of faculty in a wide range of departments, including American Studies, Anthropology, Environmental Science and Policy, History, Philosophy, Political Science, Science and Technology Studies, and Sociology. Students in STS pursue a broader understanding of science than is available within traditional science majors and is also suitable for students in the social sciences interested in interpreting science and technology as part of society and culture.

The Program.
Graduation with a degree in Science and Technology Studies requires completion of introductory courses in the social sciences and humanities, in the natural sciences, and introductory, laboratory and seminar courses in STS. Upper division work includes electives from each of two different, complementing areas of concentration (“modules”) and twelve units (plus prerequisites) providing depth, concentration, and field work opportunities in the sciences. The modules are: (1) Cultural Studies of Science and Technology; (2) Ethics, Values, and Science Policy; (3) History and Philosophy of Science; (4) Medicine, Society, and Culture. Courses in the modules require careful selection to make the best use of the STS major. Prerequisites for courses in the sciences can be extensive and require students to advance quickly in the sciences. Students are encouraged to take advantage of faculty and staff advising to plan their course of study.

Career Alternatives.
The STS major will create an opportunity to analyze science and allied practices from historical, philosophical, sociological, political, anthropological, and cultural perspectives. STS prepares students for careers that must address the broader social, cultural and political ramifications of science, technology, and medicine such as law, journalism, public policy, economics, government, and science education. Careers that students of STS from many universities nationwide have pursued, in addition to academic careers in STS, include employment in: systems engineering, website design, science museums, non-profit health organizations, government service, libraries, law, medicine, veterinary medicine, dentistry, nursing, teaching, public health administration, media companies, management consultant practice, and the Peace Corps.

A.B. Major Requirements

Preparatory Subject Matter................. 16

Science and Technology Studies 1............. 4
Science and Technology Studies 20.... 4
Eight units selected from American Studies 1A, 1E, 5; Environmental Studies 1, Humanities 3, Philosophy 30, 31, 32; Science and Society 1, 2, 3, 5, and Technology Studies 32; Lower-division science courses from the Approved Science Electives list below............. 8

Depth Subject Matter.......................44-46

Twelve units each from two of the following modules:

Quarter Offered: I-Fall, II-Winter, III-Spring, IV-Summer; 2015-2016 offering in parentheses
Pre-Fall 2011 and on Revised General Education (GE): AH—Arts and Humanities; SE—Science and Engineering; SS—Social Sciences; AGCH—American Cultures; DD—Domestic Diversity; Wrt—Writing Experience
Fall 2011 and on Courses: 120, 200, 300, 400, 500; American Studies 101G, 158; Cinema and Technocultural Studies 151; Peace and Security Studies 1